EDUCATION

A MONTHLY MAGAZINE

DEVOTED TO THE SCIENCE, ART, PHILOSOPHY AND LITERATURE OF EDUCATION

HERBERT BLAIR, EDITOR-IN-CHIEF

PROFESSOR OF SCHOOL ADMINISTRATION, BOSTON UNIVERSITY

VOL. LIII FEBRUARY, 1933 No. 6

VISUAL EDUCATION NUMBER

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Published by THE PALMER COMPANY

120 Boylston Street Boston, Massachusetts

Raymond P. Palmer, Business Manager

Published monthly except July and August. Subscription price $4.00 per year. 40 cents per copy. Entered as second class matter at the Post Office, Boston, Mass., under the Act of March 3, 1879

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EDUCATION

Vol. LIII FEBRUARY, 1933 No. 6

WORLD PEACE THROUGH MOTION PICTURES

HERBERT S. HOUSTON

MEMBER OF THE BOARD OF THE MOTION PICTURE RESEARCH COUNCIL AND FORMER PUBLISHER OF "THE WORLD'S WORK" AND "OUR WORLD"

Our horizon is extended to include the entire world by Herbert Houston's international view of the motion picture in education. The motion picture has already become a factor of major importance in international affairs. Is it too much to hope that through it we may achieve world peace?

IN the old seacoast town of Castine, which had been under four flags, I first heard of the motion picture as an agency of international peace. The occasion was the meeting of the board of judges, of which I happened to be a member, to award the twenty-five thousand dollar Raphael Herman prize for the best plan to promote world peace through the schools of the world.

Over two thousand plans had been submitted in a dozen different languages; but there was running through nearly all of them, like a thread of light and hope, the proposal that educational motion pictures could help toward better understanding, and that the place to develop that understand- was in the schools. All the members of the jury of award were impressed, as I was, with this constantly recurring proposal. It seemed a swelling tide, beating on the rocky Maine coast, as if the international seas were driving home the idea that the way to establish peace was by having the children of every country come to know, through the educational picture, about the customs, the products, the lives of every other country. I left Castine an enthusiastic believer in educational pictures as a great agency of peace, and my belief has grown into a strong conviction.

The twenty-five thousand dollar award was made to the late David Starr Jordan, President of Stanford University, a mighty fighter for peace all his life. In the years since, there has been developed behind his plan the World Federation of Education Associations, now recognized as one of the most powerful and effective organizations working for peace. Its great biennial conventions bring together thousands of teachers from every part of the world, all devoted to the great movement for peace through the schools. In the coming June the next convention is to assemble in Dublin. Throughout its sessions the place of the motion picture in spreading understanding through the schools will be explained and emphasized. The Director-General of this World Federa-

tion is Dr. Augustus O. Thomas, formerly State Commissioner of Education in Maine and the Chairman of the Committee that made the award to Dr. Jordan. It is not too much to say, therefore, that a ship of peace was launched in old Castine by Dr. Thomas, Dr. Robert A. Millikan, President MacCracken, Mrs. Cora Wilson Stewart and the other members of the Award Committee that is spreading its white sails in all the seven seas.

As this article is being written there has just reached this country the report of the British Commission, representing over two hundred different organizations, that has been making an exhaustive study of motion pictures in the British Isles. In another article in this magazine, I understand, there will be a review of its important findings; but I must give one conclusion that shows, in a flash of insight, why the motion picture can so powerfully advance the cause of peace. It is as follows: "The claim of the film to the serious consideration of educators rests on its ability to extend the limitations of actual experience." What a searching observation! And how true it is! The film can extend the "actual experience" of the pupil to encompass the world. In a very real way it can bring into every school a moving pageant of life, from every country, thus demonstrating the unity of the vast human family which till the end of time must be the one enduring basis for peace.

Another report of unusual significance that has just appeared was prepared by Dr. F. Dean McClusky, the editor of this special issue of EDUCATION, under the title "Visual Instruction—Its Value and Its Needs." This comprehensive report was made for the Motion Picture Producers and Distributors of America and has a foreword from Mr. Will H. Hays. All of its one hundred and twenty-five pages are important, but the final chapter — on what is being done in visual instruction in foreign countries —is particularly related to the subject of this article. It is made clear that progress in every country has reached the point where the value of the teaching picture in education has been demonstrated. That is shown in the work being done in France, England, Japan, Argentina, Russia and in other countries. But with all this encouraging record there stands forth the stark and unpalatable truth that in every country the supply of pictures is inadequate and, in the main, not wholly satisfactory. The recommendations presented to correct this condition should challenge everyone interested in visual instruction, whether in the field of teaching or in the field of motion picture production.

But still a third report — or rather a series of reports, known as the Payne Fund Studies — is on the point of being issued by the Macmillan Company, in nine volumes, as this special number of EDUCATION appears. These Studies, the most comprehensive and scientific that have ever been made of the motion picture, will command the widest attention. They should satisfy everyone that in the motion picture— in the language of John J. Tigert, former U. S. Commissioner of Education—"lies the most powerful weapon for the attack on ignorance that the world has ever known."

But the purpose of this article, of course, is not to analyze these reports. Their appearance, almost simultane-

ously, however, is of the deepest significance to what is the article's purpose—the place of the motion picture in establishing peace in the world. These reports and studies are both records and forecasts. They give a world-wide survey of what is being done in the motion picture field; and they give for the first time (in the Payne Fund Studies) a scientific appraisal of results. Taken together they constitute chart and compass for the future.

It would seem inconceivable that the educational world would have to wait much longer for the teaching films, closely coordinated with curricula, that it has needed. One great source of supply already exists on a continuing production basis in the current newsreels. Dr. McClusky points out, in his report, that "a current events educational weekly, composed of the timely subjects from the current newsreels, would be a valuable addition to the teaching equipment of educational institutions throughout the country. Such a release in itself would justify many schools in installing projection equipment."

Here is a teaching picture right at hand that can be made available for the schools with a moderate amount of intelligent editing. It is here proposed to the World Federation of Education Associations that, at its coming convention in Dublin, it devise a method of editing and then appoint an able committee of educators in every country to apply it to the newsreels, to the end that the schools can presently have *educational* newsreels. If this were done a plan would shortly be in working operation. Of course, the detail of carrying a plan forward could not be left—at least for long—in the hands of a committee; but this would be an admirable and authoritative way to get a plan started. For one thing it would presently result in a formula as to how pictures that portrayed events involving politics, religion or race could be most wisely handled for use in the schools. This suggestion is respectfully submitted to Dr. Augustus Thomas in the belief that it might easily result in the initiation of a movement in Dublin next summer that would profoundly affect the progress and peace of the world.

Another admirable international sponsor, already in existence, for a vast *know-the-world* movement in the schools, would be the International Educational Cinematographic Institute which was established in Rome in 1929, under the supervision of the League of Nations. Governor Carl E. Milliken of the United States is on the Administrative Council of the Institute, and it already has an important program of work that is being carried out. This organization, under international control and heading up under the League of Nations, the one great institution that exists to promote and conserve peace in the world, would seem to be fitted in every way to help launch this Educational News Weekly, made from the newsreels, and give it such high authority that it would win quick acceptance. Of course the News Weekly, in different countries, could be varied; but these variations could be under the direction of the committee constituted for that particular country. These suggestions are made here because they have to do with organizations that are already going concerns, and they both are deeply interested in educational motion pictures.

Either the World Federation or the International Institute at Rome, standing behind the world-wide plan proposed, might hope, in due course, to dull the present cutting edge of intense nationalism by building up in the schools of each nation a better understanding and feeling toward other nations. In Russia, where the educational picture is most widely used, it is now made the agency of a strong Soviet propaganda. But the same agency can be used to inform the children of Russia about the life and progress of other countries. And when Russia sees that her own life is being fairly portrayed on the screen to other countries, she can be expected to visualize these countries more fairly and fully to her own people. This is simply being human — and every informed person agrees that, at bottom, the Russians are among the most human and friendly peoples in the world.

Some years ago there appeared in a magazine I was publishing a series of articles by Dr. Wallace Atwood, President of Clark University, on what was being taught in the schools of every country about other countries. They were full of interesting information. Some of it was encouraging and some of it the reverse. But they all threw into high relief the priceless opportunity the schools offer for giving the vivid story of history in the making, of what Dr. Atwood has so aptly called "human geography." Today that story can be "visualized" and the pupil's "experience extended" from his own community into every part of the world. If that story were "seen" as well as read it would widely expand the boundaries of understanding. It should not be too much to hope that this understanding would some day usher in the era of good will and peace.

A BUSINESS MAN LOOKS AT VISUAL EDUCATION

GEORGE A. SKINNER

FORMER PRESIDENT OF EDUCATIONAL FILMS CORPORATION OF AMERICA

An American business man, the hypothetical Mr. Smith, finds that the production of educational films for school use depends on the successful coöperative efforts of technician, business man, and educator.

THE question asked by many an American business man when conversation turns to visual education is, "Why don't schools use movies for teaching?" Our business friend goes to the movies. He sits through so-called "balanced" programs consisting of the feature, a comedy, an "educational," and a news-reel. It requires no great imagination on his part to vision "what our children might have" as Charlotte Perkins Gilman puts it. He has seen many articles and editorials on the subject and he feels that teaching with pictures must be a good idea. Even though he has had little contact with pedagogy and its methods he knows that pictures do teach. His children are in school and as a taxpayer he feels that moving pictures properly integrated with class-room procedure would economize time and effort and produce a superior product.

Let me recount the experience of

one business man who began to think that way, one who had the time, the money, and the inclination to run the matter down—as he expressed it. Mr. Smith—the name is not the right one—knew from his business experience something of industry's use of the film, not only in advertising, but for organization purposes, and he had read accounts of the use of motion pictures abroad. Hugenburgh's control of and policy in Ufa, Mussolini's travelling screens, and Russia's widespread educational cinema campaign impressed him as evidence that some leaders at least recognized that the motion picture was a good way to tell what they, the leaders, wanted the masses to know. That the message they told was good or bad wasn't the particular point; it was the choice of the medium used for spreading the message that was for him the interesting thing.

Mr. Smith had heard of the unsatisfied demand from the schools for teaching film and he had plenty of evidence that this country could make good pictures, technically at least. He knew that as a nation we are spending millions on education — his tax bills helped check that fact—but he had been told that there was no American company successfully making and selling pictures for the educational world — and he wondered why. If all that he read or heard and believed were true it appeared that here was an opportunity to establish a fine and a great business in the making and selling of teaching pictures; a business comparable to the making and selling of text-books. He saw the opportunity for service, the profit, the prestige, and the power that would accrue from the organization and operation of a successful teaching picture corporation, and the lure was great.

His interest up to this point had been largely emotional, but his business training asserted itself—he wanted the facts of the situation—and he decided to really investigate.

Appreciating that the words "teaching pictures" implied a knowledge of what should be made, as well as the ability to manufacture, Mr. Smith realized that first he must know just what the school demand really was; what school men had done, and why; what their experiences had taught them about pictures in education; what conclusions they had reached and what were their recommendations. So he went to the educators and asked.

He wasn't taken very seriously at first. The educators had spent too much time, in the last fifteen years, answering similar questions, asked by many investigators, to be greatly impressed by just another inquirer or just another questionnaire about visual education. Their experience had been that most of the inquiries had originated wholly in a desire to financially exploit the educational field.

Mr. Smith found that the educators had purchased thousands of projecting machines. While pictures called "educationals" had appeared, yet in almost every case screening showed that teaching values had been submerged in entertainment values—sometimes only amusement values. Such pictures were not pedagogical. The makers apparently had paid little heed to the teachers' suggestions as to picture content or structure. In many films fact education was stressed and scrutiny revealed in too many instances that the advertising of a product, that

propaganda for a cause or that publicity for an individual was the real objective of the so-called educational. Mr. Smith discovered that this sort of thing was not endorsed by educators. The work of the Save Our Schools Committee had already shown that which was obvious to anyone, except the promoters interested, that advertising must not be allowed to gain a foothold in the schools.

Further study showed that pictures which would be of practical value in the broadening of experience, in stimulating the imagination and in character building had been seldom produced and although pictures that "confirmed to the curriculum" were often talked about, they never appeared. In the few cases where educational objectives had been primary, the suggested production plans had not been such as could be expected to produce worthwhile results, from the educator's point of view. Consequently the necessary cooperation from the leaders in educational thought had not been obtained — and these projects had died.

Just to get the story of what had happened over a period of many years took months of patient inquiry. The information didn't come in first interviews, and it is outlined here in a sketchy way. As the story was gradually unfolded, Mr. Smith found that much more had been done about movies in schools not only by business men but by educators, than he had previously believed. The problem was bigger than he had thought it was; it had more "angles." He was commencing to see "why they don't do this thing better?" He was also commencing to sense the basic source of difficulty. It seemed to him, reading between the lines of the educator's tempered statements, that there always had been lacking, on the part of the business men, an understanding as to what an "honest and intelligent cooperation with the educators" really meant.

To cut a long story short—the story of years of careful investigation—Mr. Smith, our business man, finally found the educational world's answer to his questions: What the school demand really is? What the school men were doing and why? What their experiences had taught them about pictures in education? What conclusions they had reached? and What their recommendations are?

Before 1910 new devices and techniques in teaching were introduced into our schools supported only by opinion, new innovations must face the acid test of educational measurement. As a consequence educators have conducted a considerable number of scientific studies dealing with the place and value of visual instruction in education. He found that a total of 38 important research studies in visual instruction have been published up to the present. Three additional studies are as yet unpublished. Of the printed studies the reports of 9 have been of sufficient scope and importance to be published in book form, 29 have been published as magazine articles in the leading professional journals or as pamphlets. He found that the educators conducting these studies included names which stand at the top rank of those high in the profession of educational research; for example, Cyril Burt, W. W. Charters, Frank N. Freeman, Charles H. Judd, Sir James Marchant, Mark A. May, C. A. Ruckmick, Charles Spearman, George

D. Stoddard, L. L. Thurstone, and Ben D. Wood.

The work of these educators showed that not only had research proved the theoretical value of visual instruction but that classroom experience had indicated its practicality. The educators had come to the conclusion that visual materials have a great value in education. To quote one writer: "The period of evaluation is completed, visual instruction has proved its case. The practical step of providing visual materials in large quantities at low cost should follow immediately."

He found from the educational point of view that the experience of pioneering commercial enterprise had taught three fundamental lessons about the manufacture of visual materials; to quote: "In the first place, in the creation of visual materials close cooperation between trained teachers and experienced picture producers must start at the very beginning and continue until that material is placed in the classroom; in the second place materials must be produced in sufficient quantities and at low enough cost to enable wide-spread use; and third the manufacturing companies must have sufficient capital to insure their permanence." He also found that there was a large demand for visual materials by educators and that the demand is not being met to the satisfaction of the educational world, neither in regard to the quality of the material nor its quantity.

So much for research, the statements which had been published by educators were positive and authoritative. The supporting proof that they offered was voluminous. Mr. Smith had found out by this time that the motion picture was only one factor in visual education, there were also lantern slides, stereographs, photographs, models, diagrams, charts, museum exhibits and a host of classroom aids which were classified as visual materials by educators. He now had proof that he had been right in his original thought: pictures for teaching were a good thing—and they were wanted.

But what about the educator's recommendations? Here he found some variance of opinion but after careful study it could be boiled down to something as follows, to quote from a recent educational report:

"If visual education is to realize immediately its full possibilities in the classroom, four very definite steps must be taken to achieve that result:

I. Some form of institution or association, independent of commercial interest, must be established to serve as a clearing-house of information.

II. Educators must assume a more active role in the development of the new technique and the acquisition of facilities for its use.

III. Those charged with the administration of visual instruction in the schools must assume definite responsibilities toward the training of teachers, the buying and servicing of apparatus, and the setting up of a methodology.

IV. As quickly as possible the several producers now in the field, and those who come into the field as the market develops, should organize their efforts, as they relate to the entire scope of the school curriculum, so as to bring about the continuous production, distribution, and rental of pedagogical motion pictures."

Mr. Smith found that he need spend little time checking up on the business or manufacturing end of the problem. He was taken into a room, one day, and was given the opportunity of examining en masse the data which one group had accumulated, studied and

filed, not only for their own use, but in order that accurate information might be immediately available on any phase of visual education. He was given access to the prospectuses, publicity articles, and reports of 33 educational film companies.

Now, what is Mr. Smith going to do about what he found out? He says that his course of action is clearly indicated. He is working for the establishment of two organizations:

1. A non-commercial endowed clearing-house competent to recommend, advise and endorse.

2. A commercial, permanent, independent producing and distributing company.

He says that the history of the past twenty years proves the necessity of the clearing-house and that the cooperation of the educators with educational picture makers will never be obtained until the meaning and implication of the words "permanent" and "independent," as applied to the manufacturing company, is clearly understood by business interests; permanent so that educational authorities will be encouraged to devote time and money to the administration of visual instruction and independent so that they may know the purpose of such a company is primarily educational.

Through these two steps Mr. Smith hopes that the dream will materialize which motivated his interest at the beginning, namely, to be of service to the schools of his country by providing excellent visual materials at low cost and to conduct in a business-like way an activity which would make a contribution to education everywhere.

TALKING MOTION PICTURES IN THE UNIVERSITY OF CHICAGO'S NEW EDUCATIONAL PLAN

CHAUNCEY S. BOUCHER

DEAN OF THE COLLEGE, THE UNIVERSITY OF CHICAGO

The plea for coöperation in the previous article is exemplified in the University of Chicago's plan to utilize the sound motion picture in classroom instruction.

IN 1930, President Robert M. Hutchins announced a new educational plan for the University of Chicago. The College part of this program, representing many years of work by members of the Faculty of the University of Chicago and consummated under the leadership of President Hutchins, was put in operation in the autumn of 1931.

An outstanding feature of the plan is its differentiation between general education and specialized study. In order that students may be given a broad general education as a basis for future specialization, generalized training is emphasized in "The College," which includes the first two years of university work. Specialized study begins later in the university's upper "Divisions" and Professional Schools. In order to give the student in his junior-college years something approaching a respectable minimum of contact with the many "departmental" fields of knowledge, an introductory general course is offered in each of the four "divisional" fields—

the biological sciences, the humanities, the physical sciences, and the social sciences — that cuts across the many subject-matter specialties.

Obviously, in order that these general courses fulfill their purpose, changes in the organization and content of many departmental introductory courses were made necessary. The departure in organization and content was so far-reaching that it was necessary to release certain professors from part or all teaching duty in the spring and summer of 1931 in order to prepare the syllabi to be used. This important task was facilitated by a grant from the General Education Board.

As the work of organizing the general courses progressed it became obvious that certain economies in the mechanics of presentation of subject matter should be effected if possible. The use of the talking-motion picture was suggested and it was decided to develop this medium as an integral part of instruction in the new general courses. We are now in a position to report progress with the motion picture program.

The pictures are being produced with the cooperation of Erpi Picture Consultants, Inc. They are correlated with the printed syllabi which have been prepared for the general courses in the college. Eighty talking pictures are planned, twenty pictures in each of the university's four general divisional fields, the biological sciences, the humanities, the physical sciences, and the social sciences.

The advantages of such pictures are many. A ten-minute film presentation can demonstrate clearly many natural processes requiring days, weeks, months, and years. For example, such phenomena as the development of deltas, a river digging a new channel, the action of wind-blown sand on rock formation, can be portrayed vividly and accurately through time-lapse or slow-motion pictures which make visible movements imperceptible to the human eye. The motion picture may be used in place of demonstrations to show experiments which ordinarily take much expensive apparatus and many hours to set up. Such famous experiments as Michelson's determination of the speed of light can be brought into the classroom through this medium. By using animated drawings many forms of experiments may be clarified by focusing the attention of the student upon the important processes involved. For example, pictures dealing with electrical phenomena may illustrate through animated cartoons the action of a transformer by tracing the flow of electrons in association with the magnetic fields. In addition, the size of the motion picture on the screen enables the focus of attention upon important details which in a lecture demonstration would be lost to all but the fortunate few who are within close view of the instructor's demonstration desk.

A great master of science can conduct an experiment for reproductive purposes with elaborate and expensive equipment so clearly that students may be instructed with resulting films without the hazard of changing conditions which may cause the failure of a delicate and costly laboratory experiment. A telescopic lens will bring distant objects prominently upon the screen. This is invaluable in the study of the solar system. The microscopic lens will enlarge minute living and moving organisms to the size best adapted for study and will show actual

physical changes taking place. X-ray photography will make possible the observation and demonstration of processes within opaque objects. Just as motion pictures taken slowly and projected rapidly, or vice versa, make visible things the human eye cannot see so does the sound record of perfectly synchronized speech enable this material to be presented with an effectiveness and emphasis often lost by many but the most skillful lecturers. Sound amplification can often be used so that inaudible sounds can be clearly heard. The student cannot obtain such experiences and the subsequent knowledge obtained from them by any other method.

In materials to be presented by talking pictures the subject matter that can be adequately presented by textbooks or blackboards is eliminated. The pictures endeavor to present significant processes rather than merely popular or spectacular features. Each of the pictures is accompanied by a handbook that contains discussion leads, references, bibliographies, and all the material necessary to make the most of the talking picture presentation. By noting the objectives outlined in these guides and reading over the "Content of the Sound Film," which contains the lecture accompanying the picture and lists the demonstrations to be shown, the student may prepare himself to gain the maximum possible benefit from the first showing of the film.

The first two films in this important series of class-room talking motion pictures have been completed. The two pictures, "Oxidation and Reduction" and "The Molecular Theory of Matter," demonstrate fundamental theories of Chemistry and Physics with methods such as time-lapse, microscopic photography and animated drawings. They introduce methods of illustration that could not be used even in the best equipped university class room. In "The Molecular Theory of Matter" the bombardment of molecules in a gas upon containing surfaces is likened to the pounding of machine-gun bullets upon a steel plate. To make the analogy forceful the picture shows the gun in action and the effect of the bullets upon the plate. The picture by means of microphotography actually shows the effect of the movement of molecules in what is known as the Brownian movement. The kinetic molecular theory, developed on the basis of the behavior of gases, is not limited to these phenomena, but is extended to interpret the behavior of liquids and of solids and of their mutual transformations. But this ten-minute film presents not only a single theory; it constitutes an excellent example of the scientific method.

In "Oxidation and Reduction" many examples of these chemical processes are demonstrated. To illustrate them more dramatically, to bring them home to the student in unforgettable forms and to correlate them in terms of every day life, the picture brings a raging forest fire into the room; an oxyhydrogen torch burns its way through steel plate; steel rails are welded and the operation of a coke oven, impossible in the classroom, is demonstrated by the films. Many other equally dramatic forms of oxidation and reduction are shown to illustrate these common processes in nature, with a vividness impossible in the classroom.

It must be remembered, however, that the subjects for the first two pictures in this series were not chosen because of their spectacular or dramatic possibilities. Both were chosen because of their usefulness in our introductory general course in the physical sciences. "The Molecular Theory" was chosen because it illustrates the use of experimental devices impossible of reproduction in the class room, because it is particularly adapted to demonstrate the value of animation, and because most of the apparatus takes considerable time to set up.

"Oxidation and Reduction" was selected for filming because it illustrates quite different advantages. Most of the apparatus is quite simple and was used (aside from its appropriateness) to show that much of the lecturer's time can be saved even in such cases, and that even for simple apparatus the moving picture has the advantage of bringing to every student in the room equal opportunity for seeing every detail. A second important point was to show that practical applications of scientific subject matter can be more vividly portrayed in less time by the moving picture than in other ways.

Professors Herman I. Schlesinger and Harvey B. Lemon supervised the production of these pictures which are closely integrated with the second edition of the *Syllabus for the Introductory General Course in the Physical Sciences* edited by Lemon and Schlesinger, and available through the University of Chicago Bookstore to any person who may be interested. The student "Study Guide" to accompany this picture makes frequent direct references to the reading material used in connection with the syllabus. The "Study Guide" also contains instructions for the student to assist him in gaining the greatest benefit from the film presentation. To quote:

"In order to derive the greatest advantage from the film, the student should become thoroughly familiar with the introduction and the objectives before the film is shown.

"Previous to the initial showing it is desirable to discuss the objectives and their relation to the study. After the picture has been shown, phenomena observed in specific scenes should be recalled and consideration given to the significance of those scenes to the sequences of which they were a part. The sequences of the picture also should be compared with each other; for instance, the similarity between the phenomena associated with the burning of phosphorus and with the corrosion of iron may be developed. Such an analysis prepares the student more intelligently to view the picture the second time and gives him the proper foundation for beginning the development of the subject.

"This may be an opportune time to discuss topics not treated by the film; to relate individual scenes to what the student has already learned about chemistry; to select specific problems to be studied, and to associate phenomena portrayed by the film with the student's every-day experience. The second showing should be given after progress has been made with classroom and laboratory work and need for the showing is evidenced.

"Before the second showing, the student may find it helpful to prepare a list of unanswered questions or problems which were suggested by the first showing or which have arisen in subsequent study. The second projection of the film will undoubtedly answer many of these questions and will provoke additional questions and suggest further activities. At its conclusion, discussion will bring out the significance which certain scenes have for the activities in which the students are engaged. This

will allow him to redirect his efforts and to seek assistance if necessary. It likewise will indicate what elements he should study during subsequent showings of the film.

"It is believed that a minimum of three showings is desirable to secure the best use of the film. The third showing should bring to a focus the student's ideas about oxidation and reduction, and should add meaning to the activities which he has carried on during the study. As with the other showings, the student may note questions and should review the objectives. Group discussion following the third showing should bring to a successful conclusion the study of the subject and should aid the student in preparing for whatever tests are to be undertaken."

A lack of space prevents further discussion of the use to be made of these talking motion pitcures at the University of Chicago. Experience with these pictures in actual classroom instruction will follow and this will result in further evaluation of this new medium of presenting subject matter. That will be another story in itself.

A SYMPOSIUM OF RESEARCH ON THE VALUE OF THE SOUND PICTURE IN TEACHING

THE RELATIVE EFFECTIVENESS OF THE SOUND MOTION PICTURE IN TEACHING ELEMENTARY SCIENCE AND MUSIC[1]

V. C. Arnspiger

TEACHERS COLLEGE, COLUMBIA UNIVERSITY

The first doctor's dissertation to be written on the value of the sound picture in education is summarized here by Dr. Arnspiger who is Director of Research of Erpi Picture Consultants, Inc.

THE purpose of this study was two-fold: (1) To determine the relative effectiveness of teaching with the aid of certain educational talking pictures in the fields of natural science and music in Grades V and VII respectively, and that of the usual methods of classroom instruction, and (2) to make an analysis of the composition elements of certain scenes of the talking pictures used in the experiment to serve as an introduction to the study of their relative effectiveness.

Description of the Experiment

The sound pictures used in the experiment were based on Units of Instruction written by workers trained in the fields of science and music with due consideration of modern educational theories and practices. The Units of Instruction served as courses of study for the experimentation. They were: in natural science—Butterflies, Beetles, Amphibians, and Growth of Plants; in music — The Symphony Orchestra and Its Instruments, (The String Choir, The Woodwind Choir, The Brass Choir, and the Percussion Group).

1 Summary of a dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, to the faculty of Teachers College, Columbia University.

The natural science units were studied in the second half of the fifth grade; the music units, in the second half of the seventh grades of junior high schools. Approximately 950 fifth grade pupils in 32 classes, 1425 seventh grade pupils in the same number of classes and 64 teachers participated in the experiment. Five cities from three states were chosen: New York City, Schenectady, N. Y., Camden, N. J., Elizabeth, N. J., and Baltimore, Maryland.

The experimental-control technique utilizing the equated teacher method was followed throughout the experiment. The pupils of the control group were taught by the ordinary classroom methods without the aid of talking pictures. The pupils in the experimental group, however, were presented with three showings of each educational talking picture during the regular class periods. Teachers of both groups received Units of Instruction, upon which the pictures were based, which served as courses of study. It may be noted that the control teachers utilized teaching methods with which they were familiar while the experimental teachers were untrained in the utilization of talking pictures.

As an objective check on teacher ability the Jacob's Teacher-Efficiency Rating Scale was used. It was found that the difference in the average rating of the teachers in the experimental and control groups was negligible.

The Pintner Rapid Survey Intelligence Test, Form B, was administered to all pupils. The results of this test indicate that the natural science groups were well matched on the basis of intelligence. In music, there was a statistically significant difference in average intelligence quotients favoring the control group.

Objective tests, devised to measure the pupils' initial information concerning each of the four Units of Instruction in each of natural science and music were administered. Each of the initial tests was composed of approximately fifty items which included essay-completion, one-word completion, multiple (four) choice, two-choice, and true-false types.

The results of the initial tests in natural science indicated that in every test, with the exception of that on the unit *Beetles,* the average score made by the control group was higher than that made by the experimental group. In only one of these, *Growth of Plants,* however, was the difference statistically significant. In music, the initial information of the control group was superior to that of the experimental group in every one of the four units. For three of these the differences may be considered statistically significant.

Each unit was taught during a two weeks' period. Both natural science and music groups received 150 minutes of instruction for each unit. The three ten-minute presentations of each talking picture to the experimental groups were part of the 150 minutes of class instruction. At the end of each unit of instruction a comprehensive final test based on the material in the Unit of Instruction and comparable to the initial test was administered.

Four weeks after the completion of the fourth unit of instruction the initial tests were repeated as recall tests. The teachers were not informed, prior to the date set, that recall tests would be administered.

Results of Final Tests

The final test gains over the initial tests indicated that these talking pictures made distinct contributions to learning.

The difference in average gains for the combined cities favored the control group in the case of every unit studied. The per cents of superiority ranged from 22 to 30 in the natural science units and from 18 to 34 in the music units.

The average gain in the total natural science test made by the experimental group was 180, and that made by the control group, 143. This is a statistically significant difference. (Critical ratio, 9.55[2].) The percentage of superiority of the experimental group was 26.

The average gain in the total music test made by the experimental group was 167; by the control group, 132. This difference is also statistically significant. (Critical ratio, 9.52[2].) The percentage of superiority of the experimental group in music was 27.

The average gains made on those test items, the answers to which were furnished directly or indirectly by the talking pictures as well as by the Units of Instruction indicated specific contributions of these talking pictures.

The per cents of superiority favoring the experimental group in these items of the tests ranged from 41 to 60 in the natural science and from 20 to 37 in the music units.

On the picture-unit items of the total natural science test for all cities combined, the percentage of superiority of the experimental group was 52. In the case of the total music test the superiority of the experimental group was 31 per cent. The critical ratios were 16.32 and 10.65, respectively, indicating statistically significant differences.

The study of averages made by the two groups on those items of the tests which were presented only by the unit of instruction and not by the films seems to indicate that the significant superiority of the experimental group in average gains made on picture-unit items was not made at the expense of subject-matter other than that presented specifically by the pictures.

The final test gains made in the total natural science and music tests for groups of below average and above average intelligence levels indicate that the talking pictures made distinct contributions to the learning of both types of pupils.

Results of Recall Tests

The average recall test gains over the initial test were greater for the experimental group in every unit of study. In natural science the per cents of superiority ranged from 9 to 18; in music, from 14 to 32.

The experimental groups exceeded the control groups in the total natural science and music recall test gains for all cities combined. These differences were statistically significant. The superiority of the experimental groups was 26 per cent in natural science and 22 per cent in music.

The per cent of retention of final test information is greater for the experimental group in the case of the total natural science test and greater for the control group in the total music test. Neither of the differences between the experimental and control

2 A critical ratio of 3.00 or more indicates statistical significance.

groups represents statistical certainty, however.

It appears from the evidence furnished by the recall test results that the talking pictures used in this experiment made a lasting contribution to learning in both natural science and music.

Effectiveness of Specific Elements of Talking Picture Composition of the Films Used in the Experiment

A study was made of the effectiveness of the elements of composition of certain scenes from the films used in the experiment as measured by the comparative test gains of the experimental and control groups. This study seems to indicate that those elements of composition which are of greatest importance in the production of the educational talking picture are, the proper integration of audio-visual elements, a generous use of the "close-up" focal length, excellent lighting of scenes, and a judicious use of repetition.

In summary it appears that the talking pictures used in this experiment made significant and lasting contributions to the learning both in natural science and music units of instruction, and furthermore that these contributions were not made at the expense of the learning of other elements of subject-matter of the units not included in the talking pictures themselves.

THE TEACHING EFFECTIVENESS OF THE SOUND MOTION PICTURE IN GENERAL SCIENCE

PHILLIP J. RULON
HARVARD UNIVERSITY

Just what will be the place of the sound motion picture in instruction? Professor Rulon's investigation does not attempt to answer this question, rather it emphasizes the need for finding the answer.

NEARLY a decade has passed since Ellis and Thornborough[1] succintly summarized seventeen important objections to the use of films in education. During the decade many of the objections have been removed. In particular, the objection that "the benefits to be derived from the use of motion pictures are uncertain and unproven," has been attacked repeatedly and successfully. The only reasonable summary of investigations to date is that motion pictures have definite pedagogical value, at least in certain situations. But the results have not been uniform for all school subjects or all teaching conditions.

The purpose of the Carnegie Study[2] recently conducted by Harvard University and the University Film Foundation was to set a numerical expression for the relative effectiveness of the sound motion picture when used in the teaching of one of the common junior high school subjects.

The subject chosen for the experiment was General Science of ninth grade level. Instructional material

1 Ellis, D. C. and Thornborough, Laura, "Motion Pictures in Education." New York, Crowell, 1923, pp. 40-41.

2 Financed by the Carnegie Foundation for the Advancement of Teaching.

from the fields of physiography and biology was organized and presented in a textbook of eight chapters. Paralleling each of the eight chapters was a reel of talking motion pictures specially produced to supplement the textual presentation.

Three groups of children were employed in the experiment. A Film group of 443 children studied the textbook and were shown the collateral films. A Control group of 1241 children studied the textbook in the usual fashion without the films. A Zero group of 296 children did not study the experimental instructional material at all, but continued their previous study of other General Science subject matter. All the school systems cooperating in the experiment were organized on the junior high school plan, with General Science required in the ninth grade.

At the beginning of the experiment none of the groups of students had any advantage over either of the other two with respect to general science information score, mental age score, chronological age, socio-economic status of community of residence, or previous instruction in general science. The groups were approximately equal in sex distribution of students.

The experimental instruction lasted six weeks, during which time the Film and Control groups studied during equal amounts of class time with equal amounts of assigned homework. The two groups were also equal with respect to the size of class in which the students studied, the rated excellence of their teachers, and the load under which their teachers labored.

At the end of the instructional period, all three groups were tested during two class periods with subject matter tests composed of two-choice and three-choice objective items. All of these items were answerable by reference to the textbook which both the Film group and the Control group studied. No items were employed whose answers appeared in the film and not in the textbook.

Since the Zero group did not study the instructional material, its average score on these tests represents the result of zero instruction. The amount by which the Film group average exceeds the Zero group average is therefore an index of the gain in information brought about by the film teaching technique. Similarly the difference between the Control group average and the Zero group average represents the gain in score achieved by means of the unsupplemented textbook instruction. It is a comparison of the Film gain with the Control gain which answers the question as to whether the film and text technique is more effective than the traditional textbook presentation, when other factors are rendered constant. The comparison showed that the Film gain was 20.5% greater than the Control gain.

To guard against placing too much confidence in a numerical result which might be only a chance occurrence due to accident of sampling, the probable error of this difference in gain was computed and found to be 2.6%. The smallness of this value practically excludes the possibility that the film superiority is an artifact. For, interpreted, the difference of 20.5% and its probable error of 2.6% indicate that should the experiment be repeated

an indefinite number of times and the results of all experiments averaged, the chances are even that the average result for all experiments would be a percentage within 2.6 of 20.5. Pursuing this interpretation another step, the chances are only 3 in 1000 that the combined results of indefinite repetition of the experiment would yield a Film superiority as small as 10%, and the likelihood that extended repetition of the experiment would show finally that the film and non-film gains are really equal, is practically nil.

It is true that the motion picture technique was the new technique, and hence the one which might arouse more enthusiasm in the students. But motion pictures at school were not entirely new to these pupils. The experiment was performed in schools whose use of such visual aids is certainly not below the average. And with the experiment lasting throughout six school weeks, it seems unlikely that the consistent superiority of the film children's performance should be due solely to the enthusiasm resulting from the novelty of having motion pictures in the classroom.

In terms of school administration, the results of the experiment would seem to indicate that the introduction of well produced or carefully chosen genuinely supplementary sound motion pictures would bring about in six weeks of General Science instruction somewhat more extra informational learning than would result from an extra week of unsupplemented study.

Whether this advantage is sufficient to warrant the introduction of films generally in General Science instruction remains largely a matter of cost accounting. But the effectiveness of good film supplementation of General Science instruction in producing increased informational learning seems no longer a matter for reasonable doubt.

EFFECTIVENESS OF SOUND FILMS AS AIDS IN CLASSROOM TEACHING

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Professor Clark finds that the superimposed-sound-lecture film is of doubtful value as a classroom aid and that sounds natural to the scenes themselves are helpful in teaching with the motion picture. His use of the motion picture to study the attention factor is of especial interest.

THE educational sound film has now presented itself to the teacher as an aid in classroom instruction. What are its special merits that might commend its general use in the classroom? When the technique of sound motion pictures was first developed it was believed by many educators that talking motion pictures offered a valuable new device to improve classroom teaching. The extremely rapid and recent development of equipment making sound motion pictures extensively available has left many problems to be solved regarding the place and value of such pictures as an aid in education.

The first problem in the use of

sound films in the classroom was the development of suitable educational pictures and reproducing equipment. A number of producing companies and educators are now working in this field.[1]

The association of sound with motion pictures presents new learning problems, and requires special study to determine the peculiar contributions which talking pictures have to make to the process of education. This special study does not involve, it seems, a complete evaluation of motion pictures as teaching aids but the extension of information which is already available on the use of silent motion pictures. Extensive study has been made, both in this country and in England, of the contribution and values of educational silent films when used as a form of visual aid in teaching. It is not important to duplicate studies which are concerned broadly with the educational contributions which moving pictures in general have to make. Extensive use of silent pictures at present in the schools of the United States indicates the teachers' faith in the merits of the educational motion picture.[2]

Rather, it is the association of sound with the moving picture that constitutes one of the fundamental problems which at present needs greater study. It is important to the teacher to know what is the effectiveness of the educational sound films when used as an aid in teaching as compared to the effectiveness of silent films when so used.

It is generally agreed that moving pictures may be used effectively in reproducing in the classroom delicate and difficult scientific experiments, and in showing the habits and characteristics of many forms of animal life, social customs and physical characteristics of foreign peoples, and geographic scenes difficult or impossible to produce in the classroom otherwise. It is also known that time lapse photography may be employed to bring in review in a few minutes with a moving picture events extending over a period of days, months or years. This has been accomplished for a number of years with the silent films. A fundamental question seems to be, can these things be done more effectively with the sound film than with the silent film? If so, how and in what particular instances?

The Problem

The problem to which this report is addressed is, (1) the relative values of educational sound motion pictures as compared to two other types of teaching aids, namely, silent motion pictures and lecture demonstrations; (2) the kind of educational sound motion pictures most effective for purposes of classroom instruction. This evaluation of sound films is made only in connection with their use as a part of the regular classroom teaching, and is not concerned with their use for special "shows" or as special features. It is the particular effectiveness of the association of sound with the motion picture, and the type of sound effects of most worth which were the primary considerations of the study which forms the basis of this discussion. Two phases of the prob-

1 See "A New Force in Modern Education," New York: Educational Dept., Electrical Research Products, Inc., pp. 16; also, "A New Tool for Effective Education," Chicago: University of Chicago Press, pp. 12.

2 "Motion Pictures in the Public Elementary and Secondary Schools." United States Office of Education, Circular No. 46, 1932, pp. 8.

lem as stated above are herewith reported; that is, the relative values of sound pictures as a means (1) for the conveying of concrete knowledges or information and, (2) for stimulating and maintaining interests.

Experiment Described

This experiment was conducted with freshman college students enrolled in a survey course in science. Approximately twelve hundred students were the subjects of the study which extended over a period of one academic year. The students taking the course were divided into two groups for experimental purposes; an experimental group and a control group. The sound films which were studied were used with the students in the experimental group, and other means of demonstrating the same material shown in the sound films were used with the students in the control group. The two groups were selected so as to make them as nearly equal as possible in mental capacity and educational achievement.

Three types of comparisons of the educational merits of sound films with the other two kinds of teaching aids used were made. These were made in such a way as to provide a comparison of the effectiveness of sound films as a teaching aid with identical silent films; also, a comparison of the effectiveness of sound films with lecture demonstrations. In addition an indirect comparison between the effectiveness of sound and different silent films was possible through the common element of the lecture demonstrations.

When silent films were used with the control group in place of the sound films, the silent films were identical with the sound films, except that their explanatory material was given by printed captions rather than by a speaking voice accompanying the pictures. When demonstrations were shown to the control groups in place of the films, these demonstrations were in all cases identical with things shown in the films.

Two Types of Sound Films Studied

A total of twenty educational films were studied in the investigation. Ten of these were sound films and ten were silent films. Two types of sound films were studied. It is important to distinguish between these two kinds of sound films.

The films used in the first half of the experiment were of the verbal lecture type. The sound consisted only of a spoken explanation and discussion of the items shown in the film by a speaker who was not seen in the film. That is, the sound was a speaking voice accompanying the various scenes in the films. No sounds which are natural to the items shown in the films are reproduced. In reality, this type is a film which is made as a silent film and to which a lecture is later added in place of the printed captions.

The films used in the second half of the experiment were the kind in which the sound was a vital and realistic part of the picture. When there was an explanation made, the speaker was in the picture and was working with the object talked about. All sounds which were natural to objects in the pictures were reproduced by the films. The crackling of a towel, for example, frozen in liquid air was heard in the picture when the experimenter was working with liquid air

and talking about its properties. The sound in such films has the effect of being a part of the activities of the picture, rather than merely about those activities. To omit these sounds, therefore, is to detract from the reality of the picture.

Measuring Devices Used

In order to measure the effectiveness of the sound films used, two types of measuring device were employed. One consisted of a battery of written tests constructed for this purpose and related to the activities included in the films. The other was a photographic record of the classes undergoing the experiment, made when the students were subjected to certain predetermined influences.

The written tests used were of two kinds. One of these tests was a comprehensive examination relating to the factual content of the films. It was used to measure the relative values of the films as a means for conveying specific information. The comprehensive examination was of the multiple choice and recall type of items. The second kind of test used was an interest examination based upon the films used in the second half of the study and similar lecture demonstrations. The test was given twice, before and again after the films had been used, in order to measure the persistence of interests and also the stimulation of new interests.

The second type of measuring device used, namely, the photographic record of the students, was for the purpose of determining another phase of student interests as stimulated by the sound films, silent films, or lecture demonstrations. This was to measure the sustained attention of the student as indicative of the immediate interest which he has in the topic being presented. The effect of a distracting stimulus was used to measure the extent of sustained attention.

The distracting stimulus was provided by a ringing bell or a flashing light at a point in the room different from the point on which the students' attention was being focused by the motion picture or lecture demonstration. The number of students who were distracted was determined by photographing the class after a sufficient reaction time following the stimulus. The photographic apparatus was mounted in the front of the classroom. The entire apparatus was electrically operated so that the instructor could produce the distracting stimulus and photograph the class at any instant by pushing a single control button. The number of students who were distracted was determined by counting, in the photograph, the students who had looked away from the center of attention.

Results and Conclusions

In noticing the results of this experiment it is important to keep in mind the main purposes of the study. These were two-fold; namely, to determine the relative value of educational sound motion pictures, as compared to educational silent movies, and lecture demonstrations; and to determine the type of educational sound motion pictures most effective for purposes of classroom instruction.

The tests used and photographs made showed the following results and are believed to warrant the conclusions as drawn regarding the educational values of sound motion pictures when

used as an aid in regular classroom instruction of mature students.

Educational sound films of the lecture type, in which the sound consisted only of a speaking voice accompanying the scenes of the pictures, were compared with silent films identical or very similar in content. The students having the silent films made higher scores than did the students having the sound films. The difference in scores in favor of the silent films were 3.5 times and 16 times their probable errors on two divisions of the comprehensive test. These are significant differences, and indicate clearly the superiority of the printed caption over this lecture type of sound film. The use of a spoken lecture, therefore, in place of the printed captions, in an educational moving picture is most likely to detract from its value in conveying specific information.

Educational sound films of the type in which the sound is a vital and realistic part of the pictures, were compared with lecture demonstrations identical with the items in the films. The differences in scores of the experimental groups having the sound films, and the control groups having the demonstrations, had experimental constants of 1. and .7 in favor of the sound films, and .4 in favor of the demonstrations on three divisions of the tests. These are not significant differences, and show that such sound pictures are equally as effective as is the lecturer performing and explaining the actual demonstrations. Such sound films are, therefore, highly valuable for classroom use. The silent films which were compared with identical lecture demonstrations, also, showed results which were somewhat similar. The experimental constants were in the three instances 5.3 and .3 in favor of the demonstrations, and 1.4 in favor of the films. These factors seem to indicate an advantage in favor of the demonstrations used over the silent films used. While these differences are small, the carefully controlled conditions of the experiment add to their significance. This type of sound film, when indirectly compared with silent films, through the common medium of the lecture demonstration, seems to be, therefore, more effective and to afford more educational possibilities than the silent film.

Interest measurements were made only on the films and demonstrations used during the second half of the study. Only sound films of the type in which the sound is a vital and realistic part of the picture were used in this half of the experiment.

In analyzing the data from the interest examination it was found that the percentages of students having been taught by each of the three kinds of visual aids, i. e. sound films, silent films and demonstrations, who maintained their original interests as shown by the same choices on the initial and final taking of the test were as follows: demonstrations, 54.6 percent, sound films, 59.4 percent and silent films, 60.3 percent. The difference between the sound films and the silent films is inconsequential. However, the difference between these two forms of visual aids and classroom demonstrations is probably large enough to be significant.

New interests stimulated by sound films, silent films and demonstrations as shown by new choices on the final test, considering only those items

which were presented by different visual aids to the experimental and control group, were as follows: sound films 27.4 percent with identical demonstrations 22.2 percent; and silent films 26.7 percent with identical demonstrations 26.2 percent. Therefore, sound films seem to be more effective than demonstrations in stimulating new interests, while silent films appear about as effective as demonstrations in this respect.

Present interest on the part of the students in a given activity relating to scientific things, as indicated by the degree of sustained attention in the presence of a predetermined distracting stimulus, is created by sound films, silent films and lecture demonstrations to the following relative extent; for sound films 81.7 percent of the students maintaining attention; for silent films, 75.2 percent of the students remaining attentive, and for demonstrations 54.6 percent of the pupils maintaining attention.

These results show that sound films of the type in which the sound is a vital part of the picture can be used effectively as a means of arousing interest preparatory to teaching, and in strengthening interests previously acquired. Also, they indicate that such sound films are more valuable, in this respect, than are the silent films or the lecturer with the objects themselves.

It is to be concluded, therefore, that of the educational sound films now available for classroom use the lecture type in which the sound consists of a speaking voice accompanying the picture is not sufficiently effective as a means of conveying information to justify its use in preference to identical films using printed captions in place of the spoken lecture. However, sound films of the type in which the sound is a vital part of the picture are as effective in conveying information as are demonstrations performed and explained by the lecturer, and seem to be more effective than are silent films. This kind of sound film is found to be more effective in stimulating and maintaining interests than are the demonstrations and the silent films.

The association of sound with the moving picture is effective as a teaching aid only when the sounds reproduced in the picture are those which are natural to the scenes themselves and which would detract from the reality of the scenes were they omitted. Sounds which are only about the scenes such as a superimposed lecture appear to be more distracting than helpful as a teaching aid.

COMPARISON OF VERBAL ACCOMPANIMENTS TO FILMS[1]

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The critical evaluation of new teaching devices is always stimulating. The research reported herewith, was done under the able direction of Dr. Frank N. Freeman of the University of Chicago.

SINCE each new industrial development has significance for the modern school, demonstrations of talking pictures have been viewed with interest by progressive educators. While such demonstrations have placed emphasis on the current interest appeal of talking pictures, they have not included comparisons of the effectiveness of such pictures with that of other instructional aids. Obviously, it is to the advantage of both educators and picture producers to know if the claims made for talking pictures are valid. In order to determine the relative values of talking and silent pictures for science classes, the writer conducted a series of experiments in his classes during the spring of 1932.

The following methods of presentation were used:

1. Presentation of a silent film without captions or oral comments of any kind.
2. Presentation of a silent film without captions but with oral comments by the teacher.
3. Presentation of a silent film with captions.
4. Presentation of a silent film with captions and with oral comments by the teacher.
5. Presentation of a talking picture.

In order that the effectiveness of the presentation of a silent film without captions or oral comments of any kind (Method 1) might be determined, a group of pupils in general science, Group R, were shown "The Romance of Power" without its regular sound accompaniment and without oral comment by the teacher other than a statement of the purpose of this unusual procedure and a plea for co-operation in the enterprise. This co-operation was received, since the action was interesting and comprehensible to a large degree without comments or sound accompaniment. After the picture had been shown, a test was given. The papers were collected, scored, and the results recorded. These scores were used for comparisons with the scores made by two mentally equivalent groups which were shown the same picture but with the addition of the teacher's comments in one case (Method 2) and with the addition of the regular sound accompaniment in the other (Method 5).

"The Wizardry of Wireless" and "Power Transformers" were shown as silent films with captions (Method 3)

1 Summary of a thesis submitted to the Faculty of the School of Education of the University of Chicago in partial fulfillment of the requirements of the degree of Master of Arts.

and silent films with captions and with oral comments by the teacher (Method 4) in order to determine the influence of oral comments on presentation of pictures.

The results of the experiments using general science classes were checked by those with physics groups. The physics classes were shown "Hidden Values of G. E. D-c Motors" as well as "The Romance of Power." In both of these pictures there was but little difference between the material of the first reel and that of the second, whereas there was considerable difference between the two pictures. Therefore, one method of presentation was used for the first reel and an alternate procedure for the second reel. The methods of presentation were reversed for the equivalent group. Since two equivalent groups were used in each case and since two types of presentation were given in alternate order to these groups, it was possible to check on the reliability of the procedure, to make comparisons between two methods of presentation, and to verify the conclusions reached from one set of comparisons by those of another set under almost identical conditions.

Separate controls for sound and picture projection allowed the pictures to be shown at exactly the same rate to all groups, with or without sound at the will of the experimenter. The use of the same machine for the film alone, for the film-teacher lecture, and for the talking-picture presentations made for perfect duplication of the mechanical conditions, such as rate of projection, flicker, amount of illumination, and clarity of the picture.

A preliminary experiment with tests and pictures showed that a completion test using words and diagrams was superior to the essay test or the true-false test as far as construction, scoring, reliability, and objectivity were concerned. The questions were not designed to determine whether the pupil secured his information through visual images of the motion picture, through verbal memory of the continuity, or from the comments of the teacher or speaker. Which of these influences was the most valuable was determined by discovering which method of presentation gave the most comprehension. The groups were retested in some cases after a few weeks interval.

The names of the pictures used, the type of test, the number of questions, the number of pupils used in determining the reliability of the test, and the estimated reliability are given in Table I. The reliability was determined by applying the Spearman-Brown formula for predicting the reliability of a lengthened test to the correlation coefficient for the odd and even numbered questions.

The results of these experiments are summarized in Table II, which shows the names of the pictures used, the method of presenting each reel, and the median score for each group. These data may be better understood by comparing this table with the following discussion. The results of showing the film "The Romance of Power" without captions or comments (Method 1) gave median scores of 8.8 for the first reel and 9.3 for the second reel. When this picture was presented as a silent film without captions but with oral comments by the teacher (Method 2), the median scores were 13.3 for the first reel and 14.3 for the second reel. Undoubt-

TABLE I

SUMMARY OF THE PICTURES AND TYPES OF TESTS USED, THE NUMBER OF QUESTIONS, THE NUMBER OF PUPILS TESTED, AND THE ESTIMATED RELIABILITY

Name of Picture	*Type of Test*	*Number of Questions*	*Number of Pupils*	*Reliability and P. E.*
Wizardry of Wireless	Diagram	25	57	.81 ± .03
	Completion	54	44	.93 ± .01
Power Transformers	Completion	54	44	.85 ± .03
Romance of Power	Completion	40	140	.71 ± .01
Hidden Values G. E. D-c Motors	Completion	40	44	.75 ± .05

TABLE II

RESULTS OF THE EXPERIMENTS ON VERBAL ACCOMPANIMENTS TO FILMS

Name of Picture	*Reel Number*	*Method of Presentation**	*Group Used*	*Median Score*
Wizardry of Wireless	1 and 2	Moving picture-lecture (4)	Ph. 1	36.0
	1 and 2	Moving picture (3)	Ph. 2	33.0
Power Transformers	1 and 2	Moving picture (3)	Ph. 1	29.5
	1 and 2	Moving picture-lecture (4)	Ph. 2	35.5
Romance of Power	1	Talking picture (5)	GS 1	14.0
	1	Film-lecture (2)	GS 2	13.3
	2	Talking picture (5)	GS 2	13.6
	2	Film-lecture (2)	GS 1	14.3
	1	Talking picture (5)	Ph. 1	16.5
	1	Film-lecture (2)	Ph. 2	14.5
	2	Talking picture (5)	Ph. 2	15.5
	2	Film-lecture (2)	Ph. 1	15.5
	1	Film alone (1)	R	8.8
	2	Film alone (1)	R	9.3
Hidden Values in G-E Motors	1	Talking picture (5)	Ph. 2	11.0
	1	Film-lecture (2)	Ph. 1	11.3
	2	Talking picture (5)	Ph. 1	9.0
	2	Film-lecture (2)	Ph. 2	9.3

* The figures appearing in parenthesis in this column represent the method of presentation as described earlier.

edly, the addition of the teacher's comments are effective in making the pictures more comprehensible to the pupils. Similarly, the tests for the talking picture presentation (Method 5) gave a median score of 14.0 for the first reel and a median score of 13.6 for the second reel. A comparison of these results shows that there is no significant difference between the results of the presentation of the talking picture (Method 5) and those of the presentation as a silent picture without captions but with the oral comments of the teacher (Method 2).

The answers to the tests were also analyzed by the use of a diagnostic chart. This chart contains a row for each pupil and a column for each question. If an "X" is placed in the proper column after the pupils' name for each question that is answered wrong and an "O" for each question omitted, it is possible to determine at a glance what each pupil did on the test and what the group did on each question. Such an analysis calls attention to individual differences which might otherwise be overlooked or neutralized in the average. This analysis for the films presented with oral comments by the teacher and for the talking-picture presentation showed that, when the teacher talked, the pupils did much better on questions which dealt with technical or unfamiliar terms and names, such as "shadoof," "treadmill," "galley," and "Steinmetz."

This result suggests that one of the disadvantages of talking pictures for educational purposes may be the difficulty of learning new words through hearing them pronounced by a strange voice. Furthermore, in a talking picture there is no possibility of stopping to study a new word as can be done in the motion-picture caption.

Since the writer was unable to find the same picture in both the form of a motion picture and of a talking picture and was unable to secure permission to cut out the captions on a motion picture, it was impossible to make direct comparisons of the relative effectiveness of motion pictures and talking pictures. However, it is possible to arrive at some conclusions as to the relative effectiveness by indirect comparisons. Through the experiments comparing the effectiveness of the presentation of a talking picture (Method 5) with the effectiveness of the presentation of a silent film accompanied by the oral comments of the teacher (Method 2), one arrives at the conclusion that there is little difference between the results of these two forms of presentation. Since the factor of the teacher's comments is common to both the presentation of a silent film with oral comments but without captions (Method 2) and to the presentation of a silent film with captions and with oral comments (Method 4), it may be argued that there could be little difference between these two presentations. To argue otherwise would mean that the printed captions interfere with the comprehension of the picture. Such evidence indicates that the talking picture has little, if any, advantage over the ordinary silent motion picture accompanied by well-planned descriptive comments by the teacher.

Conclusions

It should be noted that the conclusions of this study are based on comparisons of pictures of the science type. These conclusions should not

be applied to pictures involving dialogue or dramatic action. It is believed that, with this limitation, the following conclusions are valid and reliable.

1. Verbal accompaniments increase the comprehension over that secured from the film without caption or comment, but it is immaterial whether it is the teacher or the talking picture speaker who comments.

2. Both carefully planned comments of a descriptive character and directions calling attention to particular terms or features increase the pupils' *immediate* understanding and memory of a picture.

3. If the added comments of a teacher produce any *permanent* effect on the pupils' comprehension of a silent picture with captions, completion tests administered after a few weeks' interval are too coarse measures to show this effect.

4. The function of verbal accompaniments to films are to furnish the word symbols which may be used to represent the more concrete experiences which the films portray and to direct attention to the important terms or features of the pictures.

5. Silent motion pictures accompanied by the teachers' comments are superior to both talking pictures and silent pictures with respect to the learning of new technical words or unfamiliar names.

6. The main function of films is to make instruction concrete in order to avoid verbalism. On the other hand, since most thinking is done with the aid of words, one of the main functions of education is to supply verbal symbols for concrete experiences. The ultimate aim of this goal of education is the development of the ability to carry on abstract thinking. From this standpoint, either verbalism without experience or experience without vocabulary means an incomplete education. The results of this study indicate that, so far as instructional values in science are involved, the printed caption together with the oral comments of the teacher form visual images and oral stimuli which are at least as effective as the impressions formed by the talking picture.

EDUCATIONAL IMPLICATIONS OF THE REPORT OF THE BRITISH COMMISSION ON EDUCATIONAL AND CULTURAL FILMS

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With characteristic farsightedness the British are studying the effect of the cinema on their national life. Mr. Short has summarized, from a recent report, the recommendations of a notable English commission with relation to the use of the cinema in English schools.

A STRONG plea in behalf of provision of teaching films for the schools has lately been made by a widely representative body of Englishmen organized as the "Commission on Educational and Cultural Films." The Commission was initiated by joint action of the British Association for the Advancement of Science and the British Institute of Adult Education. Over one hundred organizations in the British Isles of like standing—educational, scientific, governmental, learned, commercial, etc. — share responsibility for the report and recommendations, thus making them in a very real sense the voice of the nation on the subject.[1]

The judgment of the group of representative men who made this report is that the film should be accorded a position of very great importance in the schools. "Perhaps the greatest service which the cinema can render, as the greatest disservice, is in the schools." "The taste of the next generation is largely formed at school; therefore the school cannot afford to neglect so important a factor as the film in the education of a generation which goes regularly and naturally to the cinema." "The claim of the film to the serious consideration of educators rests on its ability to extend the limitations of actual experience; it is not merely a visual aid. In a system of national education which no longer relies wholly on the written word, the film becomes an essential instrument in the child's preparation for life." It "stimulates original and clear thinking." "The quality of the recollection is improved." "It leaves a remarkably permanent impression." "The first use of the film (is) to show life to beginners in the art of living. The ordinary picture theatre aiming at amusement, excitement, and entertainment for adults shows life always under unusual conditions, and, therefore, teaches false views of life. The school ought to feed the minds of its scholars by showing them true views of life." But "the cinema, however well harnessed to school use, is not a substitute for good teaching."

The above sentences, taken almost at random from the report, fairly represent the position of the Commission at the end of a two-year inquiry.

The place which the Commission accords to the film in the adult education of the future is equally impor-

1 "The Film in National Life," 200 quarto pages, George Allen and Unwin, Ltd., Museum Street, London. 1 shilling net.

tant. "The new visual and oral aids to learning are challenging the long established dominance of the printed word," says the Commission. "The country's need is to control the machines (radio, cinematograph, talking projector) and make them its servants, not its masters." "There is first the films for higher technical instruction and scientific record in work of university standard; then the film for use in technical schools, demonstrating, perhaps, the application of mechanical principles; then the film for use in industry to demonstrate processes to the worker, to train apprentices, and to guide young people in choosing a vocation; the film for training in a special subject such as agriculture; the film for propaganda in respect to national issues such as public health and infant welfare; the teaching or interest film, helping the tutor of a university extramural or Workers' Education Association by demonstration or illustration; general interest (or other) films for audiences of a general type such as educational settlements; film programs for showing on special occasions such as Sunday afternoon matinees; and films of special artistic merit or cultural interests for local film groups or societies." "The whole of this sequence may be called adult education."

The emphasis of the commission throughout its report is on a positive constructive program for the use of motion pictures. "A country with the social customs of Great Britain must always have some sort of public control over public exhibitions, but it is a mistake to attempt to make a restrictive force into a positive agent of improvement." "Preoccupation with censorship, even in a worthy cause, distracts attention from constructive effort. We desire to see a positive influence exerted over the whole field of cinematography which will develop all that is most valuable therein from the point of view of science, education, commerce, recreation and artistic enjoyment. Censorship, however enlightened, cannot do this."

In the convictions indicated by the above paragraphs the Commission proceeds to sketch a program for the fruitful use of the cinema in the life of the empire. It will represent one commonwealth to another and the mother commonwealth to all. It will be a vivid exponent to the world of what is best in English life. Films will be made which are psychologically adapted to aid in the ordered progress of the native races throughout the empire.

For the guidance of this expanding and empire-serving industry, the Commission urgently recommends the establishment and endowment of a National Film Institute. "The connecting line running through this report," they say, "is the nature and extent of the service which a permanent central organization in the form of an established film institute, with sufficient funds and independence of action, might render in promoting the various uses of the film, as a contribution to national well being. Our report will carry conviction only insofar as we have succeeded in demonstrating that the formation of such an institute is an urgent national necessity." It will act as a clearing house for information, stimulate public demand for high grade entertainment, advise and assist schools and teachers, mediate between the motion picture industry and the cultural needs of the

nation, conduct research, establish film libraries and catalogues, advise government departments, represent the film interests and policies of the government throughout the empire, and, in general, meet the needs of situations as they arise in the world of the film.

The tone of the report throughout is one of extreme urgency. "The film is a power in the education of the child." "It is a new medium which we may turn to our service but which may easily be turned to our disservice." "If action is not soon taken by responsible authority there is a very real danger lest the development of the film as an instrument of education and culture get into the wrong hands, and the new medium be turned to our disservice." "In the public interest the breech between national culture and film activity must be healed." "It (the film) is not merely 'business'; it is a national concern. For the prestige of a nation is already affected by the films which it exports, and will increasingly be judged thereby. The U. S. A., however unjustly, have suffered much in this country from the popular estimate of their worst films." "No nation that produces films and no nation which imports the films produced by others can afford to ignore the cinema."

The report, in its largest aspect, is an impressive spectacle of a nation with social life already closely organized, girding itself for effective use of this new instrument of progress. A sprawling people like the United States may well mark, inwardly digest, and take like action.

THE NEXT STEP IN VISUAL EDUCATION

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Dean Barr is a leader in visual instruction in Iowa. He senses clearly the problem of securing the right kind of equipment, especially films. Perhaps this issue of Education *will serve to bring Dean Barr and Mr. Skinner together.*

IT is no longer necessary to argue with the average teacher in favor of visual education. While not everybody is convinced, there are so many who are using visual aids and who are enthusiastic about their use, that it is better to ignore the objectors and to try to give needed help to those who are interested. The success of interested people provided with adequate supplies will be much more convincing to those who need conviction than any arguments that can be presented.

For eight years we have been offering credit courses in visual instruction in Drake University. These courses are offered each semester and in the summer school. While no definite check has been made, it is safe to say that more than one thousand teachers have been enrolled in these classes. These teachers have quickly become enthusiastic about the use of visual aids, but they have been confronted by some difficulties that are removable and should be removed.

One of these difficulties is the cost of visual equipment. It would seem that we need somebody in the visual

education field who is willing to do for the production of equipment what Henry Ford did for the production of automobiles. When good lanterns and motion picture machines can be sold at one-half the present price, we may confidently expect that there will be an enormously increased sale of these projectors. From the touch that we have had with schools, churches, and other organizations, we feel justified in saying that if good equipment could be had at some such price as is indicated above, the number of purchasers could be so greatly increased as to justify the reduced profit to producers and distributors.

The sixteen millimeter motion picture machine began to be used in the homes, and one of the selling features to which attention was given by makers was, and still is, an attractive case. Why a sixteen millimeter motion picture machine should have its price increased fifteen dollars or more by putting on leather, imitation leather, or leatherette case is a question that no school man can answer. We have asked some of the makers to furnish a plain metal case such as is used on lanterns, and so far as we have been able to learn, have not even received consideration.

It ought to be possible to produce an entirely satisfactory sixteen millimeter motion picture machine, one that would give a clear picture under semi-daylight conditions, one that would be durable, and in a large measure fool-proof, for less than $100.00. Of course we know there are many projectors on the market now for less than $100.00, but we are arguing for a superior quality as well as for a low price.

It ought to be possible to produce a lantern which, after all, is the projector that is most commonly used, and the one for which the largest sale can be expected, the one that should be in every classroom—a lantern that would be in every way as efficient as the modern classroom lanterns put out by the excellent companies now manufacturing this kind of equipment, that could be retailed, without a case, for $25.00.

In producing the equipment, quality must not be sacrificed for the sake of price. There is too much cheap stuff on the market now. The sale of an inferior lantern or an inferior motion picture machine at any price interferes with the success of the whole movement. What we need is some producer who is willing to depend on quantity sales and small margin of profit, rather than on limited sales and a larger margin of profit.

In the motion picture field there has been wonderful progress the last few years. In the sixteen millimeter size there is now available in great numbers, highly satisfactory short films suitable for educational purposes. But one phase of the sixteen millimeter film production has not kept pace with the production of and demand for sixteen millimeter equipment. We refer to suitable entertainment films of two to four reels in length, that can be put on during school hours in elementary schools. There is a large number of sixteen millimeter so-called entertainment films available, but a very limited number suitable for school purposes. We have screened scores of them and have usually found them unsatisfactory.

In this connection we should like to call attention to the fact that we

have been hunting for a film, two or three reels in length, showing Indian life and activities, suitable for school purposes, but have not been able even to find anybody who can give us a suggestion as to where such a film can be procured. It seems unfortunate that the "vanishing American" is not leaving behind him even a motion picture film to give the coming American some information regarding the one whom our histories designate, or used to designate, as the "noble red man." The peaceful pursuits of the Indian should be a subject for an excellent film.

In spite of the fact that equipment has been and is still lacking, teachers have taken and are taking courses in visual education. These courses as now offered in Drake University, give special attention to the use and care of equipment, and we find that members of the classes take readily to the operation not only of the lantern, the opaque projector and the film slide projector, but of the sixteen millimeter motion picture machine. It has been claimed that teachers do not use equipment. This, of course, has been true because nobody has given them instruction in its use and its possibilities. Since scores of training schools are now doing this, the great need that still exists is the ability to find satisfactory equipment that can be bought at such reasonable prices as will induce school boards to supply their schools generously with lanterns, motion picture projectors, etc. There are so many things that can be done with a lantern and there is so much excellent instruction that can be given with a motion picture projector that there is surely greater reason for supplying schools with this kind of equipment than there ever was for supplying maps, charts, etc., which are found cluttering up our schools.

Some attention should also be given by dealers to prices of lantern slides and lantern slide materials, including cover glass, etched glass, ink for making drawings on glasses, etc. The prices of these materials have not been reduced in proportion to prices of other educational materials. When dealers in visual education supplies are willing to take smaller profits, depending on increased sales for encouragement to continue business, then results should be satisfactory both from the business and the educational standpoint.

DEVELOPING THE ATTITUDES OF CHILDREN

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How far are the attitudes of children toward foreigners, war, capital punishment, and the negro changed by moving pictures? Professor Charter's conclusion is that "to disregard the quality of commercial motion pictures is both reckless and dumb."

THE earlier studies of the influence of motion pictures upon the acquisition of information prepared the Payne Fund group to expect to find that the motion picture had a powerful educational influence. Particularly the studies of Freeman and Wood presented evidence of their potency in the classroom. But these studies did not prepare the group for the evidences of the breadth of this influence nor completely for the power which they found.

We might describe in some detail the motion picture's potentialities as a medium for imparting facts. We could show, with some wealth of illustration, the radical manner in which behavior patterns of children are modified for good or bad by viewing the pictures of the commercial theatre. It would be possible to present facts about the effect of films upon the emotions of children. But on this occasion I wish to confine the discussion to the effect of motion pictures upon the attitudes and points of view of children.

That attitudes toward significant objects in social life are important and even crucial needs little elaboration. If a nation wishes to win a war, its people must be in favor of the war. If a community wishes to stamp out crime, bootlegging, racketeering, it is necessary that the key men as well as the mass of the citizenry be strongly opposed to crime. No social enterprise can succeed unless the community attitude is favorable. The philosophy of the group must be in harmony with the movement.

Nor can we expect an individual to order his life in directions other than toward those aims which he favors and against those which run counter to his philosophy of life. If a man favors smart practices in business we can, with a high degree of accuracy, predict his behavior in situations when this point of view is involved. If an individual has a passion for honesty we believe that his actions will be honestly conceived. If a woman in her emotional life is committed to unselfishness she will only on rare occasions and in moments of emergency exhibit selfish conduct. The tenor of her behavior will be unselfish. It is, in short, a truism that as a man feels in his heart so will he behave. Our attitudes are powerful determinants of our actions.

This fact is recognized in these latter years by all governmental agencies which deal with masses of people. In our own case, when it was necessary for the nation to strive to win a war to which it was committed, publicity and propaganda became a major arm

of the government. Scores of methods were utilized,—speeches, posters, news releases, public meetings, personal social pressure, and moving pictures. Every known device was used to create enthusiasm, desire, conviction,—in short, to create a favorable attitude toward participation to the utmost. In Russia, correspondents and travelers tell us that the government has similarly adopted every method to create a favorable attitude toward the ideals and activities of those in power.

Because of the significance of attitudes and points of view, the Thurston-Peterson study[1] is of unusual significance to an audience of school people, and for that reason we shall describe some of its educational implications in detail.

The principle of the procedure used in the study was simple. A group of children were given an attitude test. They viewed a selected picture and were given the test again. The difference between their status on the first and second tests was assumed to represent the change in attitude toward or against the object.

The children were chosen from the high schools of twelve small towns in Northern Illinois. They were composed of both sexes and ranged from the sixth to the twelfth grade inclusive. One college group was tested. Small towns were selected in preference to large cities, because it was possible to control the exhibition of the selected pictures. That is to say, small towns could be found in which none of the children had seen a chosen picture. Approximately 3,800 students participated in the experiment in the 12 communities.

The tests were constructed by the well-known Thurstone technique. Each consists in essence of a series of some thirty weighted statements about the object toward which the attitude is to be measured. These statements range from those extremely favorable to those extremely adverse. For instance, in the scale for "Attitude Toward Punishment of Criminals," at the two extremes lie "Only by very cruel punishment can we cure the criminal" and "We should be ashamed to punish criminals." After an appropriate checking of agreement or disagreement with each statement by the person tested, the score for each individual and the medians for a group of students can be calculated, and located at a specific point on a scale.

The objects toward which attitudes were tested before and after the exhibition of pictures were eight in number: the Germans, the Chinese, war, prohibition, crime and criminal occupations, capital punishment, punishment of criminals, and the negro.

Correlative with the construction of scales the investigators sought for pictures which were thought to exhibit strong leanings toward or against an object. Thirteen pictures were selected from about 700 pictures shown currently in the theatres. Specifically, "Four Sons" and "Sons of the Gods" were favorable to the Chinese, and "Welcome Danger" was unfavorable to them. "Streets of Chance" was judged by the investigators to be unfavorable to crime and criminals. "Hide Out" was unfavorable to prohibition. "The Valiant" was against

1 "The Effect of Motion Pictures on the Social Attitudes of High School Children."

capital punishment. "All Quiet on the Western Front," "Journey's End" and "Four Sons" were unfavorable to war. "The Criminal Code," "Alibi," "The Big House" and "Numbered Men" were unfavorable to the punishment of criminals. "The Birth of a Nation" was supposed by the investigators to be unfavorable to the negro.

With the thirteen pictures shown to 3,800 children in 12 communities, what did the study show?

It showed first that if one wants to propagandize people in favor of or against certain values it is a simple task to find the picture. In less than two years, with the part-time services of an investigator, the authors were able to locate thirteen pictures that served their highly specialized purposes. One investigator for the Office of Education in Washington, let us say, or a representative of a state department of education in a state censor's theatre could easily locate for the schools of the nation or for a state the commercial pictures which would be useful in developing a favorable attitude toward important virtues and ideals. When these were so located, the schools might then be notified through appropriate channels. That there are few such current pictures, according to Dale's analysis, is unfortunate, and the official's task of selection would be a light one at present.

In the second place, the investigator's experience indicates the likelihood of the accuracy of the judgment of selectors. This is shown by the fact that in only one of the exposures were results found not to be in the expected direction, and that change was not statistically significant. Only four of the thirteen did not produce statistically significant effects upon some group, either alone or cumulatively. One of the pictures, "Journey's End," which with one group produced an insignificant change of .04 steps, produced with a second group a change of .49 of a step, a result statistically significant.

It thus appears that an official with reasonably good judgment would not be likely to make mistakes and select pictures which would produce results contrary to expectation. His chances of selecting powerful pictures would, on the basis of the experience in this study, be better than three successes in five exposures.

In the third place, some pictures are extremely potent in influencing attitude. "The Birth of a Nation" produced an adverse change of 20% of the original attitude toward the negro. "The Sons of the Gods" helped the Chinese by a change of 18%, but "Welcome Danger" damaged them only to the extent of 3%. "Criminal Code" changed opinions in the direction of disfavor toward punishment of criminals by 9% in one group and 10% in another. "Big House" and "Numbered Men" produced insignificant changes when seen alone.

Just what a 20% change in attitude means has not been stated by the investigators. It sounds large; its significance would be objectively determined by discovering what changes in behavior would accompany the change in attitude and calculating the importance of the altered actions.

An additional discovery of the investigators revealed the fact that two or more pictures on the same subject and presenting the same attitude have measurable cumulative effects. Two

interesting variations appeared. In the case of two pictures the changes when they were shown alone were statistically significant. These pictures were "All Quiet on the Western Front" and "Journey's End," both of which were unfavorable to war. "Journey's End" alone produced a change of 6.7 per cent; "All Quiet on the Western Front" contributed 9.7 per cent. When both were viewed by the same children, the percentage of change rose to 10.7 when "Journey's End" preceded "All Quiet on the Western Front," and 10 when the order was reversed with another group of children. "Journey's End" was obviously the weaker medium of the two and its potency was supplemented to a marked degree by "All Quiet." The change caused by the powerful "All Quiet" was not increased so notably by exposure to the weaker "Journey's End."

The second variety is of greater interest. Three pictures were judged to carry opposition to the punishment of criminals. These were "Big House," "Numbered Men" and "The Criminal code." "Big House," when shown alone, did not have a statistically significant effect. The same was true of "Numbered Men." A group shown both pictures registered a change of 3.0 per cent.

Another group was exposed to these two films and also to the influential picture, "The Criminal Code," with a resulting increase in change from 3.0 to 7.4 per cent.

These findings substantiate the judgment that if children continue to be exposed to influences in the movies which propel them in one direction, we may expect that the anticipated attitude will grow stronger in some proportion to the number of the exposures, even though exposure to one or more of the pictures in isolation may have no measurable effect. It would be interesting to teachers to know the point beyond which continued exposure ceases to have a measurable effect. It is fortunate for them, however, that a few exposures to a picture favorable to a desired attitude will produce appreciable results. Likewise it is unfortunate for their peace of mind that children can be so easily exposed to pictures in huge numbers which cumulatively break down favorable attitudes toward mores which teachers and parents have built up with thoughtful care.

A final phase of the investigation throws light on the question of how long these changes last. Do children in a few days swing back to their original status on the scale, or is the effect persistent? The investigators secured an answer to this question. All that was necessary to do was to test the children after varying periods of time had elapsed. Five of the more powerful pictures were studied. When "The Criminal Code" was shown to one group it produced a change of 9 per cent. Two and one-half months later 87 per cent of the change remained, and nine months after the exposure 78 per cent of the original change was indicated. The powerful ally of the Chinese, "Sons of the Gods," produced an 18 per cent change on the day following exposure to the film. Five months later 62 per cent of this change remained intact, and nineteen months later 60 per cent was in evidence. After five months 62 per cent of the change of attitude toward

the negro was still apparent on the scale. In the case of "Four Sons," the original gain was increased in six months to 123 per cent. The cumulative group, "Big House," "Numbered Men" and "The Criminal Code," continued its effect at 100 per cent after two months, and increased to 111 per cent at the end of four months. On the other hand, the ground gained against war through "All Quiet on the Western Front" was more than lost at the end of eight months. This is the only case in which the ground was completely lost.

The major conclusion to be drawn from these results is that on the whole the effects of motion pictures "are very definitely lasting," to quote the words of the investigators. Teachers may assume that if they use this medium for teaching important lessons the results will be persistent. This fact is strikingly supported by evidence developed by the companion studies of Holaday in his investigation of acquisition of information, and of Blumer in his examination of the origin of behavior patterns.

The increase at later dates to more than the original change and the complete reversal of one gain in the figures cited leads to a necessary qualification. That is to say, in measuring the persistence of the effect of motion pictures it is necessary to remember that the movies are not the sole medium for accomplishing changes of attitudes in high school children. Other influences operate. Other pictures or other events may have added contributing influences favorable to the Germans during the elapsed six months. Influences of an opposite character may have been at work in Paxton to enhance the regard for war. And favorable factors may have improved the position of sterner measures with prisoners in Moosehart where that increase occurred. The fact that motion pictures are only one of a number of powerful factors operating upon the attitude and ideals of children is emphatically supported by the companion studies of Blumer and Thrasher.

The evidence presented in the attitudes study supports the conviction that educational leaders should lend intelligent and vigorous support to agencies and movements which promote the use of good motion pictures in the education of children in school and out. It also points to the provision of agencies to make a wise selection of good commercial pictures to supplement the labors of school people and parents. It finally points to the extreme danger that lies in the indiscriminate exposure of children to the pictures that currently appear in moving picture theatres. If one sees pictures on the screen which shock him because they are in conflict with his mores he may rest assured that what he sees will be accepted by junior and senior high school students as appropriate controlling values of their lives. He must then either admit that his mores are antiquated, or decide to make the best of the likelihood of their being weakened in the next generation. If, on the other hand, he finds that the pictures reinforce high standards of living, he may rest happily in the assurance that the hands of the school are being upheld by other social agencies. To disregard the quality of commercial motion pictures is both reckless and dumb.

MINIMUM ESSENTIALS FOR THE LIMITED HIGH SCHOOL PUPIL

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Shall a too-large suit be made to fit by cutting off the ends of the sleeves and the legs of the trousers, or shall we measure the boy and make up a suit that will fit him without extensive alterations.

PROGRESS has been made in education through the elimination of some of the useless from the traditional curriculum. Scientific studies have resulted in furnishing schools with data concerning courses and parts of courses that are fundamental. The teacher has been enabled thereby to determine points of emphasis and to economize in the teaching procedure. Such efforts to discover the essentials of subject matter merit our encouragement.

Similarly, there has been advancement in the appreciation of the nature of the limited high school pupil. We are beginning to see that all pupils cannot profit by the same school work and that the plans of the teacher must include a consideration of the weak pupil along with the course of study. This movement to care properly for educational obligations to the limited boys and girls is also commendable.

It is when there is presented a program that restricts the education of the limited pupil to the bare "minimum essentials" that an objection should be raised. Of late there have been frequent recommendations of a meagre supply of mental food for the "slow" pupil. Pupils have been divided into three groups, the bright, the average, and the dull. The bright group is considered worthy of courses enriched through varied and interesting materials. But the slow group is consigned to narrow courses. The following statement of recent date is typical:

"Instead, she will give remedial work to those who reveal the need for it; she will give only the minimum essentials of the course of study to the slow children who cannot do average work; to the normal students she will give the regular requirements for the grade; and to the superior children she will offer an enriched and expanded program so that *they may be kept happily occupied in doing worthwhile things.*"[1]

One objection to such an educational program lies in the lack of exact information of what constitutes the fundamental requirements in the different high school subjects. It is noticeable that large cities vary much in the requirements of the courses of study. Adjoining states have made very different recommendations of what should be included in the curriculum. This confusion concerning proper requirements should be a warning against holding the limited pupil to restricted school work.

English affords an example. There is no proof that certain classics are

1 Miles, Lillian E., "The Problem of the Misfit Child," The Indiana Teacher, Vol. 76 (October, 1931), p. 16.

necessary for the cultural development of the ordinary child. It has not been found that *The Lady of the Lake, Ivanhoe, Silas Marner, The Last of the Mohicans,* and *Treasure Island* constitute a better reading list than do *The Ancient Mariner, Robinson Crusoe, The Deerslayer, Julius Caesar,* and *The Great Stone Face.* In fact, there are numerous other classics, as well as much current literature, of equal value to these — perhaps of greater value for the particular boy or girl under consideration.

In history the essentials are, likewise, unknown. There is uncertainty among specialists concerning the many points of emphasis. Questionnaires have been employed and studies of the common every-day uses of history have been made, but doubt remains. There is disagreement about the important events, names and dates. Besides, some would question the importance of these and emphasize the interpretation of history, the appreciation of the significance of the deeds of mankind. In a word, concensus of opinion and science have not yet presented the history teacher with the fundamentals of the subject.

In like manner, we do not know what should be the status of mathematics. Some argue for a course in general mathematics instead of algebra and geometry. Certainly one needs to believe in formal discipline to advocate these two subjects for every high school boy and girl. Such a position is suggested by some authorities in this field. Further, leaders in mathematics question the content of algebra and geometry. Many of the traditional topics are under fire and are being eliminated. The situation is so doubtful that mathematicians are careful as they discuss courses, to state what *is* rather than what *ought* to be. Thus there is confusion even in the exact science of mathematics.

The second objection to the restriction of the program of the limited pupil is that there is no accurate means of judging him. Several factors enter into causing a pupil to be unsuccessful in school. Among them are poor health, physical defects, a discouraging home environment, lack of ambition, lack of interest, poor study habits, poor instruction in the past and the present, and low native ability. It is problematic to isolate these factors and to determine scientifically the effects of each on the boy or girl. Accordingly, teachers should guard against stressing any one of these causes to the exclusion of the others. This warning is particularly applicable to the tendency to stress inherited ability as a cause. This inclination has been encouraged through unwarranted confidence in intelligence tests. A look at the unreliability of intelligence tests, therefore, seems fitting.

The assumption that native ability is measured rather satisfactorily is open to question when the role that differing environments play in the development of the individual is considered. That is, "Each intelligence test assumes a certain background and unless an individual possesses that background he cannot be adequately judged by means of the intelligence test in question."[2] This assumption is usually very questionable. How can a New England boy be expected

2 Pintner, Rudolph, "An Empirical View of Intelligence," Journal of Educational Psychology, Vol. 17 (Dec. 1926), p. 612.

to have the same environmental background without and within the school that the Southern boy has? Can we expect the child in the factory district to have a social environment in his home equal to that of the child on a fashionable boulevard?

Again the intelligence test possesses a weak basis in the assumption of the constancy of the intelligence quotient. Recently there have been two rather thorough experiments that resulted in questioning the constancy of the I. Q. Freeman,[3] for example, experimented with foster children who were placed in homes by the Illinois Children Home Society. He studied carefully the nature of the homes on the basis of a rating scale and through intelligence tests given to foster parents. Likewise, he eliminated rather satisfactorily the placement of intelligent children with intelligent parents and the unintelligent children with unintelligent parents. Then these children, who had been tested before they were placed in the homes were tested later by Freeman. He found that the I. Q.'s of those in the better homes averaged approximately 9 points higher than those in the lower class of homes. As he states, "The observed difference of 9.3 points is clearly significant, since its probable error is only 1.04."[4] Burks, reporting a similar experiment and referring to the results of the investigations, adds: "The investigations agree in attributing small, but significant increments of I. Q. to superior environment."[5]

A third weakness of intelligence tests is that they are too academic; that is, they measure the ability to succeed in school better than they measure intelligence as it is demonstrated in everyday life. There is quite general agreement of writers on this point. Those who lend strong support to intelligence tests admit that the similarity between the content of intelligence tests and school courses accounts largely for the validity of the tests in indicating ability to succeed in school. But, as Charters states, "If we turn from the school field to the vocational field and seek to predict success in business from intelligence scores, the case is strikingly hopeless."[6]

Evidently education has not reached the point where either the classification of pupils or the selection of courses is done with certainty. There is doubt concerning both the minimum essentials and the group of pupils whose education, as is proposed, should be restricted to them. We must cease making the mistake of restricting any vaguely understood group to questionable subject matter.

Accurate information on the two factors of fundamental requirements and the limited pupil, however, would not argue in favor of a narrow education for any weak boy or girl. The limited pupil lacks many varied experiences and has been starving mentally. His intellectual horizon needs to be broadened. Restricted courses of study interfere still further with his rightful development. Justice de-

3 Freeman, F. N., "The Influence of Environment on the Intelligence, School Achievement and Conduct of Foster Children," The Twenty-seventh Yearbook, Part I, Chapter IX.

4 Ibid., p. 130.

5 Burks, Barbara, "The Relative Influence of Nature and Nurture Upon Mental Development," The Twenty-seventh Yearbook, Part I, p. 318.

6 Charters, W. W., "Success, Personality and Intelligence," Journal of Educational Research, Vol. 11 (March, 1925), p. 170.

mands that the schools offer the limited boy or girl, as well as the bright one, "an enriched and expanded program so that they may be kept happily occupied in doing worthwhile things." Not a reduced amount of work that is beyond his mental grasp but a wider range of suitable activities is his need.

The teaching of algebra affords a good example. The program for the limited pupil should be not less of algebra, not the mere skeleton or framework of the course, but varied, interesting, and meaningful materials in other courses which may be more on his level of appreciation. Algebra can be of only little value to some pupils, because they get no further than the mechanical skills involved—the "minimum essentials." The lack of intelligence, interest, or previous training prohibits an appreciation of the significance of the operations performed. In fact, any subjects or parts of subjects beyond the appreciational plane of the pupil are harmful to him. Pursuing them discourages the pupil, instills in him bad habits of study, and robs him of time needed for suitable activities.

Here the old question about teaching grammar may be raised. Reducing formal grammar to mere "essentials" does not solve the problem for the limited pupil. Less of the wrong kind of work does not enlarge his conception of good usage. The reduction of the topics, definitions, and rules of systematic grammar does not automatically supply an appreciation of the "fundamentals" left. The weak pupil, particularly, needs many kinds of interesting experiences in oral and written work. The principle that wide and varied experiences are the basis and means of learning has no exception in English grammar. The increasement of meaningful and enjoyable usage, not confinement to drill on bare "essentials," is the heart of the program for the weak pupil.

A program of enrichment may be illustrated further in the teaching of history. In contrast to the slow pupil being held to rote memory work on a set list of events, names and dates, he should be allowed and encouraged to indulge in wide reading at his level of understanding and enjoyment. Historical facts of such minor importance to a particular pupil that they cannot be obtained in connection with wide reading and free classroom discussion are not worthy of much special attention. In studying the establishment of our government, the proper plan would permit the failing boy or girl to read extensively in stories of the formation of our government, the lives of Washington, Franklin, and Hamilton, and the like. Such a plan should be followed even though there exists from the "higher ups" the unsuitable requirement of objective tests. Give a broader historical outlook to the pupil first and then assist him as he "crams" immediately before such an examination.

There should be no question about the practicality of providing some kind of a *liberal* education for the limited pupil. We must not confess that the efficient American high school cannot furnish an education that will liberate the intelligence of any boys and girls found in it. Ways and means will be evolved by teachers who possess a favorable philosophy of education. The present lack of this philosophy is evident when teachers make the common remark that the slow pupil receives

better care than the bright one. The confusion exists partly in the failure to see that care of the weak pupil is not promoted by the teacher giving extra time and energy to drilling him on impossible tasks. In short, resourceful teachers with a vision can and will discover numerous opportunities to enrich the lives of every group. They will see that if it is possible to provide enrichment for the bright pupil a practical means can be found to do the same for the less fortunate boy or girl, the limited pupil.

MT. WHITNEY

King of the peaks, you stand a white colossus,
  Buttressed with mountains piled in massive tiers,
Gashing with stony fangs the storm that crosses
  Dragging its garments over granite spears,
And flashing fire-darts while the storm-god tosses
  His thunder-tones about your rock-walled ears.
You catch the first gold of the morning sun
And the last flashes when the day is done.

Old in man's age yet young in time, and wearing
  Small traces of the conflicts yet gone through,
You stand a challenge to the young and daring,
  Embracing glorious heights and spacious views.
The lesser peaks we top in our wayfaring
  But tempt us farther up the heights to you.
You are the apex overlooking all
The lofty summits of the mountain wall.

But time, no doubt, in future transformations
  Will tear you down to reconstruct the plot;
And then, perhaps, will future generations
  Trample upon your grave and know it not;
Or hungry oceans in their devastations
  Perchance may roll their volumes o'er the spot
Where now you stand to challenge fortal eyes
And summon earth-bound travelers to the skies.

Upward and on forever, man and brother,
  We boldly climb the summit heights of time,
Seeking, as each new height is gained, another
  Farther and higher whither we would climb
To more perfection till there is none other
  Above the summit of our realm sublime.
O king of peaks, teach us to understand
The high, the strong, the heavenly, the grand!

—Claude Weimer,
Lone Pine, California.

WORD GROUPS SIMPLIFIED

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Suggestions in teaching are always welcome, especially when so much is expressed in so small a space.

DURING many years of teaching, I have always been impressed by the large part played by the phrase and clause in most of the sentences which we speak, write, or read. In nearly all cases each phrase or clause, irrespective of length or complexity, has an easily recognized central idea or trend which can generally be adequately expressed as a part of speech, namely, noun, adjective, adverb, verb, etc.

Thus the longer sentences which so easily befog the youthful mind when any attempt is made at analysis, can be materially reduced in number of distinct parts by enclosing each phrase or clause, and labeling it, according to its nature, as a simple part of speech. This tends to clear up the confusion and lack of confidence in the pupil's mind and gives him much better control over the expression of his own thoughts or that of others which he may be inspecting.

The phrase and the clause add so much vigor, variety, substance and richness to language that an examination of their real meanings and scope cannot be avoided even by the immature pupil.

Each has a distinct purpose, and is a definite addition to the complete thought in view. When one word cannot convey the idea intended, then we will try two. If two cannot do it, then three, and so on until just the right combination is obtained. Let us look at several samples.

N. A.
[The people] [of the various colonies]
V. Adv.
[had been collected] [from different]
N. A.
[motives] and [the people] [of each]
V.
[colony] [had been busied] [with their]
Adv.
[own particular problems.]

Twenty-six words reduced to nine units of thought, with a perfectly easy explanation for each consolidation.

Two verb phrases, two adverb phrases modifying and explaining these two. Two noun phrases, each of which is talked about in the sentence, and two adjective phrases modifying the same. Then there is a conjunction connecting the two parts of the sentence. My claim is that these various groups should be treated as entities, each one acting as a unit to forward the entire thought.

Take another sentence.

N. A.
[The shore line] [which waves of the]
[Atlantic pounded on the sands] was
N. A.
[another region] [which produced an]
[article all Indians desire.]

Here we have two simple noun

phrases, each modifid by an adjective clause, and the single word "was." This reduces twenty-two words to five thought units.

Such work ought to fascinate any child of average mentality. To see ideas in the large, and reduce each one to the simplest terms, is to progress. To gain any mastery over English speech, one must become group-minded. Assembling, identifying, and controlling groups of words, is the necessary vade mecum.

I fear that too many teachers dodge the issue by confining their efforts largely to the identification of the single word. The school pupil cannot get very far on this limited fare. He must be led to see that a phrase or clause may be made up of a half-dozen different parts of speech, but that the net result of the cunningly arranged combination is the equivalent of one part of speech. Until he can comprehend this fact, his knowledge of grammatical English is very limited indeed.

Every good speaker, consciously or unconsciously, makes the proper elocutionary pause before and after each word group in every sentence he pronounces. Thus, and thus only, will the various unit ideas take their places in the development of the whole thought.

In order to make very clear the identity and completeness of the individual phrase or clause, it is sometimes advisable to connect all the words composing it, so as to make one long word. Thus:

Adv. N.

[Down-the-steep-valley] came [a-roaring-flood.]

There is nothing unnatural about this device. Christmas was once Christ mass, a phrase.

Just so with oncoming, withdrawal, and a host of other words.

In conclusion, let me say that any boy or girl who in his or her reading can quickly spot a phrase or clause, and recognize its limits and its significance, is rapidly becoming educated.

THE MYSTERY OF ACQUIRING A SECOND LANGUAGE

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Professor Sparkman asks for help from psychologists and educationists to coöperate in making this title a mis-nomer. He points out in a clear manner what some of these mysteries are.

AN oriental philosopher is quoted as saying that no adult can learn a new language any more than he can acquire a new soul. He probably meant that our native language is so vitally a part of us that it is like being right- or left-handed, and just as incapable of being tampered with. He, doubtless, had in mind that the mental equipment of the individual, his ego, has personality, was evolved alongside of his linguistic progress, and that the process once effected can never be repeated.

But perhaps this philosopher was only a discouraged teacher of modern languages who, on a particularly blue Monday, felt impelled to utter this cynical dictum. For we know for a fact that some persons of maturity do achieve creditable results, not only in learning to read a foreign language, but also in using it as a means of communication to others.

As a matter of fact, the function that our native language plays in our lives is underestimated. It is mysterious and baffling that mere words should virtually enslave us. They are the sole effective means of communication with our fellow-beings. They alone make memories possible. Only through word imagery are we permitted to call up past experiences and live over again previous joys and sorrows. That the events of our early infancy are a blank is due to the fact that we then had no verbal imagery with which to perpetuate them. Even our ability to think is conditioned wholly by our vocabulary of usable word units.

The reason for this great sway of words in the life of any individual is that they are signs or symbols that our native race has arbitrarily agreed to let stand for experiences common to our mutual environment. Words are the only means of tapping these experiences, the only cues for getting at them and manipulating them, the only common units by which like-minded individuals can portray to one another their mutual experiences. But words in themselves are no more than pegs on which to string thought, or labels that have been forcibly put to use to indicate the same content to all of us of the same native speech.

And strangest of all is that these mysterious signs known as words represent, not well-defined cross-sections of experience but hazily bounded areas (concepts) that are capable of being welded into a closely-knit unit only when they are blended with other similarly held shadowy forms while passing in review at a fair rate of speed. The very antithesis of similarity to anything else in our daily routine makes it almost impossible to describe

how it apparently works. Practically no illustrations can be adduced to clarify it, and any simile brought in is necessarily so strained that it is likely to be misunderstood. The range of descriptive terms is so limited that the few available ones must be monotonously repeated in this article. Possibly the process can best be apprehended by looking into the manner in which each of us, in early childhood, had to mark off the boundaries of our mental equipment and to attach to each unit the proper conventional word as a tangible outward sign.

A meaningless array of sounds surely must confront an infant as his elders converse around him. At last he is able to isolate, say, the word "chair" when his mother says, as she has already said on many previous occasions, "Come, let me put you into your chair." If he hears this same word used when his chair is out of sight, doubtless a concrete visual image of this particular red chair flashes into mind; and, in all probability, he utilizes this same concrete image when he wants to sit in his chair, and uses the single word to bring about the desired result. But, when he hears this same word applied to a dining-room chair, to a porch chair, or to his grandfather's easy chair, there can no longer be any one particular concrete image by which he can grasp the reality of what he now knows the class of objects to include. The word he has heard and which he himself can now use must suffice to stand for the multiple objects that he has learned to include in this category. It is soon impressed upon him that "big chair," "little chair," "high chair," are more concrete in meaning, and that they get better results if so coupled together in his own speech. He hears these same adjectives applied to other objects within his range of knowledge, and he gives to each a certain vague range of meaning. As fast as he succeeds in detaching one by one concepts of objects, qualities, tastes, acts, relations, etc., he tags each with its customary word label, which he, as well as all others around him, ever afterwards uses as a verbal sign to stand for the meaning involved.

When the child hears a series of connected words, as for example, "There is your little chair," the separate concepts, each materialized into consciousness by its respective auditory word image, stand forth and coalesce into a definite and concrete fact of experience. Only when an orderly series of known concepts stimulate consciousness is it possible for him to visualize justly a particular fact of experience, for instance, the foregoing location of his own chair, which he can now visualize in its proper place even if he goes into another room. But before concreteness of the mental picture is possible, he has had to hold in mind by means of these several mental tags the separate general ideas standing for each word used in the sentence. As paradoxical as it may seem, concreteness of the whole situation comes only through fused abstractions of the particulars. He must know that "chair" means any customary object in which to sit, that "little" refers to smallness of size, that "your" links ownership to himself, that "there" locates something in the direction indicated. And all these vague hints of reality, each manipulated by its proper word sign, knit themselves together

into a coherent whole. This does not mean that there is never any concrete mental picture of, say, his own chair, when he hears only this single word; for memories of other previously heard whole sentences are often aroused by the stimulation of one single word; but, after he has learned to use language, concreteness is never the result of an unaided single word. One isolated word, heard, spoken, or merely held in mind, has vague boundaries. It is as though it represented various loose strands of meaning, as found indicated in any good dictionary, and that it has to have other similar tenuous entities to be linked with it before it can trap and hold sufficient meaning to carry a definitely fixed value.

Another striking peculiarity of language is, that it must have a certain rate of speed before it is intelligible. Whether it be verbal or written language, movement of some sort must accompany it. When we listen to a speaker, we do not hear him word by word, but by a series of connected units known as breath groups, between each word of which he makes no greater pause than he does in enunciating the saparate syllables of any particular word. If he paused after each word, what he said would be a puzzle for us to solve. When we read, we make two or three eye-sweeps take a whole line of print. If we arrest the flow in any manner, the smooth continuity is broken and we find ourselves confronted with a mere hollow shell. Even when we talk or think, there is the same flowing on of welded units of words.

An apt example to illustrate this idea of group perception is seen in motion pictures. Each new image strikes the eye before the effects of the preceding one have been obliterated from the retina. One image always occupies the center of attention, but it colored by the one preceding, and the last combined with two or three previous ones influence the next one approaching. The four or five held in mind at the same time seem to become living things by thus drafting themselves into one another. If the machine stops, the illusion is gone; nor can we look at a series of stationary images, without some other swifter means than ordinary eye movements in passing from one to the next, and make them tell a story as told on the screen. It is as though each image loses its power to link itself with surrounding images if it occupies the sole center of attention.

Likewise, in any phase of linguistic use, separate words must be sensed at a sufficient rate of speed to permit them to be grouped and apprehended by this mysterious inner selective and co-ordinating agency, the whole process working so smoothly that we are not even consciously aware of the words that make it all possible.

We cannot hope to learn a new language as we learned the vernacular. As a child we had neither ideas nor words, and the two grew up together. We never had clear perceptions until we mastered a vocabulary to express them. Even as adults, thought and ability to express it are usually on a par. Concepts, so laboriously built up from childhood, always remain with us. The only apparent recourse is to retag them. Instead of making English words serve as arbitrary counterparts of our concepts, we may train another set of equally good, but wholly

different signs to give these concepts tangibility.

If all languages had the same word order and the same word content throughout, it would be a very simple matter to substitute other symbols for our own accustomed meaning carriers. There would then be no English, or French, or Spanish grammar, but a universal grammar, applicable to all, to be learned once and then applied unfailing to every language. In such a linguistic Utopia, some practical genius would surely have invented a mechanism for an economical and ready transfer of concept tags, and all of us could easily be equally proficient in half a dozen or more languages. The problem of learning a foreign language would then differ only in degree from that of learning to read our native language. In the latter, we build upon the child's oral vocabulary and gradually train him to touch off meaning by the same old stimulus, presented visually instead of aurally. If foreign words were used, both the aural and the visual aspects would be unknown; but meaning would still remain the same, and it could very soon appropriate unto itself the new verbal signs and train them to function in lieu of the old.

The only trouble with the foregoing rather detailed panacea for teaching a foreign language is that it does not work. As in many pseudo-scientific solutions of the problems of mankind, the writer seems to have hurried over and ignored one little item that insists on making itself felt, whether we will it or not. And that item is the fact that in no two languages have the concepts been built up and marked off in anything like similar patterns; consequently the words of the foreign language often represent, not known areas waiting to be retagged in the same old order, but new sub-divisions of that vague background of communication and thought that have never before been utilized by the learner. The meaning of new inflections must be learned. For instance, the suffix, *-ed,* used to form the past tense of regular verbs in English, might correspond to any one of twelve different endings in Spanish. Inflectional endings in one language often indicate the same content as that indicated by separate particles differently placed in another. For example, the Spanish phrase *No leo mucho,* means in English *I do not read a great deal,* while *I buy my hats at Smith's* means *Compro mis sombreros en la tienda de Smith. Ise fué el chico?* means *Did the little boy go away?* Relative word order, which is definitely fixed in English, does not always follow the same pattern in another language. We get one idea from *The man hunts the lion,* but quite a different one if the subject and the object are interchanged to read *The lion hunts the man.* In Spanish, the word order of this and similar sentences is not important, because the object is designated by the particle *a* lacking in English; hence a shifting of the word order in the corresponding Spanish version of this thought would make no material difference. *El hombre caza al leon* and *Al leon caza el hombre* would each show that the man was the hunter and the lion the hunted. *No hay de que* expresses the same thought as does *You are welcome,* yet no single word of the Spanish sentence corresponds to one word of the English. A com-

plete thought expressed in one language and that same thought expressed in another language have no trustworthy common denominator; they are incommensurable in terms of any common yardstick. Each language is a law to itself in the inner relations of the words comprising the component parts of a thought-whole.

Only about fifty per cent of the concepts used in English may be taken over without change and be retagged in a Romance language. Clearly then, a word-by-word apprehension of a new language is out of the question. The student has no available unit of apprehension smaller than this almost indefinable group of connected words, which for all practical purposes is the short sentence. In other words, no effective comparative view of the new language with the vernacular is possible unless two such unified sections of the respective languages are isolated and viewed together; and the student must compare the new with the old, because meaning has always, heretofore, been materialized through the medium of English symbols. The complete thought back of both is the only thing in common between the two.

When we consider what slaves we are to the words we have always used, how attuned are our thoughts to their expected sequence in sentences, how subtle are the turns of meaning designated by accustomed inflections, then we may see what a tremendous task faces us when the trail markers have been changed and rearranged along wholly new lines. Surely our students shall have to be taken by the hand and led over these new trails. We must give them a definite destination towards which they are to proceed and be available to advise them what turns to take and what bypaths to avoid in reaching it. To expect them to mark off a new trail for others to follow would be the height of absurdity. Yet some of us have been guilty of this very thing in demanding that beginners from the very outset write and even speak the foreign language before they have had training in interpreting it.

Deciding upon the unit of attack does not solve the whole problem by any means. The new inflections, the new word order, and new rules of syntax must be mastered. When and how shall these binding principles of grammar be taught? How shall we present this comparative view of two respective language units? Shall it be through the eye or through the ear? How long should students be expected to devote themselves to getting acquainted with the new tools of thought, expression, viz., foreign words and their ordered use, before they may begin to use these same tools in getting new information? When will the student be able to pass from studying how experts express thought through this new medium to actual practice in self-expression, in other words, from the passive to the active phase of language study? Should the three major objectives of language study: reading, writing, and speaking, be taught concurrently, or in any specified order?

The foregoing might be termed difficulties inherent in the nature of the problem, but there are other obstacles equally potent. In a recent nation-wide survey conducted by the Modern Foreign Language Study, it was found that two years is the present maximum

period of study for a very large majority of secondary schools. ("The Teaching of Modern Foreign Languages in the United States," by Algernon Coleman, published by the Macmillan Company, 1929.) If one figures out that for a year of 36 weeks, with classes meeting five times a week, the student gets on the average only 180 hours of class instruction. This would equal 30 days of 12 working hours for the whole two-year period in which an instructor is expected to perform the miracle. If we take into consideration that classes usually average 20 in number, the total time devoted to drilling any one student averages 1/20 of 360, or only 18 hours—a rather short period in which to accomplish something almost as difficult as that of learning our native language, and we devoted several years almost exclusively to the latter.

A third line of impediments might will be designated traditional difficulties. We modern-language teachers are ultra-conservative and cautious. We realize that we come from ancient and honorable lineage. We regard ourselves as poor but proud aristocrats of the teaching world. We should naturally take little stock in the psychologist's talk of "principles governing the learning process," or the educationist's "measurement of results," because these two are newcomers into the fold and they are expected to make the usual splurge of the *neuveaux riches*. But having been derided by them so often as being classic examples of medievalism in our forced emphasis on memory, we should not be human if we did not eschew their pronouncements on new techniques of problem-solving.

In view of the odds against us, is it any wonder that we modern-language teachers succeed as well as we do? Many of the problems cited have been solved; others are being scientifically studied, while candor compels us to admit that some of them have not yet been squarely faced. Since psychologists and educationists have now proven their right to be heard, they are being asked to coöperate in conducting experiments that will surely clear up many of the mysteries that still confront us. To tell how we of the profession actually teach a foreign language would make the title of this article a mis-nomer. The lay reader is, hereby, challenged to figure out a plan of procedure, applicable to students of high-school or college level, that would enable us to teach French, German, or Spanish in two years' time under existing conditions. It would be interesting to know what, under the proposed plan, might be considered a reasonable degree of attainment and proficiency expected of the learner.

HUMANIZING THE COURSE IN INTRODUCTION TO EDUCATION

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A BRIEF personal statement may assure a better understanding of the speaker's point of view in this paper. For seventeen years, preceding my entrance into the professional field of education, I was an instructor in mathematics in secondary schools and colleges. For the last ten years of this period I was professor of applied mathematics, giving special attention to courses in statistical methods and plane surveying. My gradually growing interest in education, which finally led me to abandon my chosen field of mathematics, was due to the increasingly scientific nature of education. To me it was a relatively new and exceedingly attractive field of applied mathematics. In fact, I am inclined to believe that within the present century the classic definition of education in terms of the three R's has given way to one instead in terms of the three S's, or for good measure four S's, which are characteristic of most modern work in this ancient field—scientific method, statistics, surveys, and standard tests. As a matter of fact I was scarcely conscious that I had changed my field at all—it was education that had come over into my field, the field of applied mathematics. I can scarcely be charged therefore with undue bias toward the human side, the personal side of education.

Education, recognized as an art since the days of Plato, is still and ever will be a fine art, but it is also a growing science and quite as much entitled to recognition as such as any of the other social sciences, all of which are trying to reduce the complex and intricate body of conditions and principles with which they deal to the certainty of mathematical law and statistical prediction. In the minds of most people, the mathematician or the statistician is the most unhuman, if not inhuman, of all members of the genus *homo* who are designated by the term "educators." He is the personification of all that is cold, dry, formal, lifeless. It is he that is doing his best to squeeze out of our schools all that is live, human, and vital. Our students are not personalities but mere points on the normal curve; our science of education is such a conglomerate mass of true-false tests, correlation coefficients, reliabilities, standard deviations, and intelligence quotients that we are in danger of losing sight, if indeed we have not already lost sight, of the human aspects of our work. Such is the indictment often made.

* Presented at the Washington meeting of the National Society of College Teachers of Education, February, 1932.

For ten years, on week-ends and in vacations, I dabbled with many aspects of civil engineering. In my new field I have found that while the technique varies somewhat, the fundamental principles involved in a land survey are not essentially different from those in a school survey—that the same principles are necessary in laying out and planning improvements in a school system as in an irrigation system. I believe thoroughly in the scientific spirit in education and would not have degenerated (in the eyes of my former mathematical colleagues) to the field of education could I not have continued to apply with increasing rigor the methods of mathematics, of statistics, of engineering to this intricate and fascinating field of human engineering. The highest skill of the mathematician is needed in finding the unknown quantities in the human equations of education.

I feel that there is a very real danger that we may go too far in overemphasizing scientific method, especially with neophytes who are just being initiated into our field. There is danger that the study of education will be considered dry, lifeless, uninteresting—that we professors of education will be thought to have no good red blood throbbing in our veins. This is especially the case with students whose primary interests are in other departments, but who from certification or credential requirements are compelled to take certain courses in "Education" before they are permitted to teach in their chosen fields. The amount of misinformation about us and our subject on the average campus is appalling.

The Introductory Course at Stanford.

At Stanford University we give a four-hour course (formerly five-hour) for one quarter, called "Introduction to Education." This is required of all students who expect to teach in the state, if without previous teaching experience, and is a prerequisite for all other courses in the School of Education. It was my pleasure to be given the task of organizing this course and to have charge of it several times. What is the typical opinion of many students upon entering such a course? Two or three statements made quite frankly by my students at the close of the course may be illuminating:

I had heard many times of the dryness of education courses and how one merely exists through one.

I had heard that education was a terrible bore and that one just couldn't pass those awful true-false tests which those education profs (the most inhuman individuals in the whole university) found Satanic joy in springing on the poor helpless students. I felt like a martyr walking bravely to the pyre, for a cause—a great cause—namely, that of procuring a General Secondary Certificate.

Ever since I have been at Stanford I have heard people moaning about how boring education courses are; so, when I registered in this introductory course, I was all set for a sleepy five-hour class. However, I woke up with a bang and a jolt after the first day. For the first time now, I feel reluctant to complete a course!

It is quite evident that Education in general, and the course in Introduction in particular, could stand some humanizing on at least one university campus,—possibly on others as well, although with true scientific caution I must not generalize on the basis of

a single case! Perhaps the most important thing in this introductory course is not so much *knowledge,* or *method,* as *attitude.* I therefore set myself as one very definite goal, the humanizing of the course. Perhaps it will best give my conception of the complete purpose of such a course if I read the concise statement of aims which I regularly distributed in mimeographed form to my class the first week of the course:

What should be the major aims of an introductory course in Education given in an American University to undergraduates who have had no previous work in the department? As the name of the course implies, it should be an *Introduction*—the student just beginning work in this fascinating modern field should gain a birdseye view of the subject; he should gain a firm grasp of fundamental principles; he should master at least one fundamental text on education, written by a recognized national authority; he should acquire some familiarity with the vast range of modern literature in education, both book and periodical; he should learn the use of scientific method and measurement as exemplified by standard tests and school surveys, but should not forget to stress human values as well as scientific method; he should become aware of the ramifications of education in all fields of modern life. Such a course should require a student to be not merely receptive but active. It should require him to do independent, constructive thinking; to organize his thoughts; to be open-minded; to express constantly his reactions to the new facts, principles, and viewpoints which he meets. And withal, it should appeal, not repel. It should have variety to stimulate interest, to avoid monotony, to challenge different types of minds. While giving a taste of many topics, it should exhaust none of them, but leave the student hungry for more. It should not be exhaustive, but comprehensive, sampling, enticing. It should furnish both information and inspiration and serve as an alluring index to all subsequent courses in education.

I realize that this is rather a large order, but should not "a man's reach exceed his grasp, or what's a Heaven for?" I cannot here take time to describe all the elements of the course as they were designed to accomplish this varied group of aims. I want to stress only those which deal with the humanizing aspects. To secure the proper perspective, however, it seems necessary to outline briefly some of the method and requirements for the course as a whole:

Follow the textbook, Cubberley's "Introduction to Education," and take short semi-weekly objective tests on each chapter of it.

Hand in written answers to one problem or question in each chapter.

Devote two days a week to interpretative lectures and discussions on the chapters of the text.

Devote one day a week to supplementary lectures on topics and fields not covered by the text.

Read three volumes from suggested lists, one general book on education, one school survey report, and one other (to be mentioned later) and make written reviews and reports upon them.

So far, perhaps you say, this does not sound very thrilling or particularly humanized—quite as dry and formal as reputed. It is true that I tried to inject some of the human element into the lectures, discussions, and problems. But three further requirements had more of the human element distinctly involved in them. The first of these was to read and report each week a brief characterization or summary of two magazine articles from

current educational periodicals, preferably different each week.

This proved to be a revelation to many students who discovered, to their surprise, that there was much of human interest in such journals as *School Life, Progressive Education, School and Society,* the *Grade Teacher,* the *Nation's Schools,* and the *Journal of the National Education Association,* and many others.

At the close of the course seventeen different elements of it were listed, and the students were asked to evaluate each on a scale as follows:

10. Greatest value of any element in the course.
9. Very great value.
7. Considerable value.
5. Some value.
3. Slight value.
1. No value.
0. Time wasted.

The report of one class of 84 students on the value of the periodical reading requirement was:

Greatest value of all	5
Very great value	27
Considerable value	24
Some value	18
Slight value	10

One of the five who said it was the greatest value in the course wrote as follows:

My checking periodical reading as the "greatest value of all" probably seems a bit odd; however, I have thought this over and have decided that from a viewpoint of future value—the one that will be the most lasting—these 22 magazine articles have done me more good than anything else. While, for the present, reading the textbook and attending lectures has had a much greater value for me, still I feel that in the years to come I will not remember a great deal about the text, and that I will not be very apt to pick up a textbook on Education for amusement, while I do feel quite sure that I will often read some of these educational periodicals, and will do so for the enjoyment I will get out of them. The only fault I can find with this part of the course is that I always wanted to neglect the rest of the work in order to read magazine articles.

Clipping Daily Newspapers.

Another requirement was that each student should clip all items dealing with any phase of education for one week in an assigned daily newspaper, or from six successive issues of a weekly paper. It was hoped that this would show vividly that education is not only a subject for the university classroom, but that newspapers are full of stories dealing with many aspects of the work of school and college; that they would realize that live, vital, educational facts have daily news value and can hold their own in the rigid survival of the fittest which those of us who have served an apprenticeship as reporters know is characteristic of the newsroom.

Twenty-seven daily newspapers were read for periods varying from one to six weeks, and all matter dealing with any phase of education was clipped from them. It was broadening to have students find educational matter in Russian, Greek, Mexican, Chinese, and Japanese papers, as well as in American ones. Both instructor and students were astonished to find that an average of 115 column feet (not column inches) per week was printed. Even though two-thirds of this dealt with athletics, an average of forty feet per week of more strictly news and editorial matter was found. The amount was so great in fact that the mere mechanical work of cutting and

pasting together such lengthy strings proved unexpectedly laborious and caused some criticism. The next year the same value was preserved and the unnecessary time and labor eliminated by having the news matter for a week simply measured and reported under various classifications.

Educational Fiction and Biography.

Most important of all, however, in my judgment, in really humanizing education for the student was the requirement that the third book for supplementary reading, mentioned above, should be one of educational fiction or biography, chosen from a given list. That they should actually be not only invited but required to read fiction in a course in education seemed to strike many members of the class as the most novel and incongruous requirement of all. I am quite confident, however, and my confidence has increased with experience with successive classes, that this is a feature of vital importance which should be required in every introductory course in education, and perhaps in other fields as well. The rating of the students on it varied widely, depending probably in part upon which of the suggested books they chanced to read. A summary is as follows:

Greatest value of all	1
Very great value	12
Considerable value	32
Some value	25
Slight value	12
No value	1
Time wasted	1

Such books as: Angelo Patri, *A Schoolmaster of the Great City;* Edward Eggleston's, *The Hoosier School Boy* and *The Hoosier School Master;* Jessie Field's, *The Corn Lady;* G. M. Martin's, *Emmy Lou, Her Book and Heart;* Kate Douglas Wiggin's, *Rebecca of Sunnybrook Farm;* Dorothy Canfield Fisher's, *The Bent Twig,* and *Rough Hewn;* George Meredith, *The Ordeal of Richard Feverel;* Lola Jean Simpson, *Treadmill;* Floyd Dell, *Were You Ever a Child?;* Angelina Wray, *Jean Mitchell's School;* L. N. Tolstoy, *Childhood, Boyhood, and Youth;* H. G. Wells, *Joan and Peter* and *The Story of a Great Schoolmaster,* were included.

Final Evaluation.

A half-dozen comments from students at the conclusion of the course will be of interest:

I find that Education is not the dry old subject that I have been hearing about, but instead something that is alive and changing. This course has aroused in me an interest that will never wear off.

* * *

I think I have never taken a course in which I found myself becoming so very interested that the conception gained through class work and outside reading became a predominating factor —became a living part of my everyday life and conversation. To be truthful— I had no intention of finding myself at the dinner table in the midst of very lengthy explanations as to the great problem of illiteracy, or the inadequacy of the training of our teachers.

* * *

Education has always been a subject embalmed with facts; now I find it is a vividly living field, full of interesting problems and chances of change and progress.

* * *

This course has made me feel that there is lots to be done, and that perhaps my little bit, if I try to make it a big bit, will do some good to some one.

* * *

I have found that Education courses

are not a terrible bore. In fact, they are so interesting at times that they are actually thrilling. They are not dry subjects, but living fields of human interest. My idea of "Education" was all wrong, and this course has done much to rectify it.

* * *

I started my work this fall with the idea that Education courses were useless. I thought that Education was a cut-and-dried subject in which you learned certain fixed theories and practices. I found that the courses in Education in the University are actually the most stimulating in thought that I have found. I have the feeling when I am studying Education that I am in the midst of life, a very active and fluent life, not at all stereotyped, but growing. I feel like a pioneer starting out to find a new land where he can make things more to his liking without the old conventionalities limiting him on every side.

* * *

On the whole, I feel that considerable success was achieved in humanizing this important course in Introduction to the vital field of Education and in modifying to some extent the unfortunate attitude which many students bring to the subject before they have had an opportunity to learn of its fascinating variety and human interest. Possibly all of our Education courses can stand a little more humanizing; certainly the Introduction course must.

Youth is full of idealism and enthusiasm — of the pioneer spirit — of "rarin' to go." Let us not stifle and dim this fine spirit—but intensify and stimulate it in the courses we offer. At the masthead of the *Washington Education Journal* has been carried the thought-provoking couplet:

Information and ideas are taught;
Inspiration and ideals are caught.

It should be the mission of the Introductory Course in Education not only to teach information and ideas, but also to furnish inspiration and ideals and a vision of the intimate and personal aspects in this vital field of human engineering.

IN MEMORIAM

Quietly, one sweet dusk-hour,
She dropped her needles and her knitting,
Sighed tiredly, and went to rest—
And so we found her sitting.

The earth took kindly charge of her
Whose heart feared not its long safekeeping.
And we, with many things to do,
Had scarcely time for weeping.

We dropped our tools for but an hour
To house her in the grave—deep—narrow.
Life surges on; toil never waits
For man—or rose—or sparrow.

—Norris Potter, Jr.,
Northeastern University.

YOUR SCHOOLS AND MINE

Roy C. Woods, Ph. D.
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In this department Dr. Woods will answer to the best of his ability any or all questions on educational topics that are addressed either to him at the address above, or to Education. *It is to be understood that the writer alone is responsible for the answers given.*—H. B.

Why are serial bonds better for school purposes than term bonds with provisions for a sinking fund to meet the obligation when it becomes due?

Theoretically there is probably no difference; actually there does exist at least two fundamentally important reasons favoring the use of serial bonds only for school purposes. First and probably the most important, is the absence of adequate legal provisions against the misuse of the funds so raised. There is a constant temptation to the board members to use the funds for some immediate and unforeseen need. Often no criminal intent is present, and they may even intend to replace the money with interest, perhaps, at a future date. This procedure seems so easy as compared with permitting a need to pass or to raising the levy to supply necessary funds. However, a school board personnel is subject to change at the vagaries of the electorate, and since the new board usually comes from a different "wing" and with different intent, they feel no urge to assume the old board's "debts" where it is possible to avoid them, and they refuse or fail to replace the funds and the term bonds cannot be retired at due date. In some cases the interest paid on these refunded bonds exceeds the original cost of the bonds.

A second reason is the fact that the public monies seldom, if ever, receive the same rate of interest as the bonds and frequently receive a rate lower than time deposits, and sometimes no interest at all. This, it is easily seen, will represent a distinct loss to the school district. Serial bonds, from their very nature, are free from these two objectionable features. (See Smith, Business Administration of Public Schools, pp. 375 ff; Englehardt, Public School Organization and Administration, pp. 505 ff; Fowlkes, School Bonds, pp. 83 ff; or Moehlman, Public School Finance, pp. 218 ff.)

Should married women be permitted to teach?

Barring legal restrictions there are but two reasons for dismissal of a teacher, i. e., inefficiency and immorality. A superintendent ought not to be concerned with the marital condition or status or the religious affiliation of his teachers unless they can be shown to be affecting the teaching efficiency. A married teacher who is giving satisfaction as a teacher should be retained, except in cases of retrenchment of an over-staffed personnel. In case of employment to fill vacancies the one with evidence of making the best teacher should be employed. However, it is possible that in some communities that opposition should be so strong as to render the possibilities slight that a teacher would make a success due to some cause as above. In which case the efficiency

and the morale of the school will dictate the proper course to follow. The superintendent should feel that it is a condition, however, which calls for public education upon real purposes and needs of the school.

Should there be a special class for the purpose of teaching morals?

It seems to be a controversial question as to the best means of teaching character and morals. No one doubts apparently the need, but the method is unknown. There are two "schools" of thought on this matter,—one advocating direct teaching, while the other would want indirect emphasis in other subjects. Personally, I lean toward the latter group. Make English, science and other subjects feed the character need. Do not "moralize," because by so doing it disgusts the class with morals and morality. It is, however, possible so to choose and teach as to make stand out as desirable the individuals and characteristics which make for morality and desirable citizenship. If it fails to stand out, leave it alone. *Do not drag it out.* (See Charters, "Teaching of Ideals.")

It seems to me as though I am a failure as a teacher. I cannot understand why. I made good grades in Teachers College in both academic and professional subjects. I made my poorest grade in Methods, averaged well above the "C" level, which was the lowest average for classification as a candidate for graduation. I was almost a "B" student. What can the matter be and how can it be remedied?

Frankly, I do not know. Why not talk with your principal or supervisor? They, it seems to me, can better help you than I. It is possible that you were not "cut out for teaching." There have been cases where such natural characteristics have contributed to a teacher's failure. Teaching personality is an elusive thing for me to describe, but you must have *"It"* to succeed. You may be short on *It*, but by studying other teachers who appear to be succeeding you may be able to discover wherein your weakness lies and then correct it, because to a large extent we make our personality and our *It*. Finally, pessimism has no place in a teacher's philosophy of life. Get rid of the idea of "failure" and proceed to find evidences of "success" and follow that lead. You will at least be pointing in the right direction.

DEPARTMENT OF BOOK REVIEWS

Visual Instruction—Its Value and Its Needs. By *F. Dean McClusky.* New York: The Mancall Publishing Corporation, 1932, pp. 125, illustrated.

In accepting this monograph, Will H. Hays, President of the Motion Picture Producers and Distributors of America, Inc., characterizes it as a "comprehensive survey of progress in the school's use of visual instruction and particularly of motion pictures." Dr. McClusky himself calls it an analysis of the present status of Visual Instruction from the viewpoint of education. It is both of these and more. As a member of committees of the National Education Association and the National Academy of Visual Instruction, the author has been engaged over a period of thirteen years on the research summarized in this volume. Every page bears witness to his exhaustive knowledge of the subject, his painstaking accuracy of statement, and his fine appreciation of educational values.

Dr. McClusky first defines his terms, and reviews briefly the case for visual instruction today. Thirty-four important published research studies are analyzed to show the value of visual instruction. The spread of visual instruction in the schools of the country during the past decade is shown by data collected by a committee of the N. E. A. based on a nation-wide survey and brought up to date by the Academy of Visual Instruction. "Visual Instruction, both from the commercial and educational standpoint, has been considered incidental too long. From now on it must be treated as of major importance in School and Industry alike," is Dr. McClusky's conclusion in this respect.

After this historical presentation of visual instruction the author addresses himself to the present situation. He finds (1) school systems convinced of the value of visual instruction and eager to avail themselves of visual materials, as evidenced by budgetary provisions, indicating an "enormous potential market," and (2) school administrators developing sound methods in the use of visual materials and increasing opportunities for teacher training, but (3) that "the market is not being supplied by quality material in quantity."

To supply this lack, the author recommends full coöperation between educators and producers of visual materials. "We have all the world's knowledge to translate into a new medium. We know that medium is competent; in some respects and for some purposes it is superior to the printed page. We know that we can show and explain in a few moments, by this method, many things which have taken ages for man to learn."

"These are questions which no one man should presume to answer nor any group of men, unless it be a group of able teachers, conversant and in accord with the known principles of visual instruction, and who are retained in permanent, full-time positions to carry the work continuously forward."

The specific steps required are:

I. "Some form of institution or association, independent of commercial interest, must be established to serve as a clearing-house of information."

II. "Educators must assume a more active role in the development of the new technic and the acquisition of facilities for its use."

III. "Those charged with the administration of visual instruction in the schools must assume definite responsibilities toward the training of teachers, the buying and servicing of apparatus, and the setting up of a methodology."

IV. "As quickly as possible the several

producers now in the field, and those who come into the field as the market develops, should organize their efforts as they relate to the entire scope of the school curriculum, so as to bring about the continuous production, distribution, sale and rental of pedagogical motion pictures."

The book concludes with a brief survey of visual instruction in foreign countries, showing activities all over the globe. Especially interesting are the reported activities of the International Educational Cinematographic Institute in Rome, under the supervision of the League of Nations in coöperation with the International Labor Bureau.

The great significance of "Visual Instruction, Its Value and Its Needs" lies in its recommendations. No one active in the field can have failed to meet the problems and difficulties presented. No one can fail to be impressed with the author's earnest desire to find a solution and with his wide knowledge of the field. His recommendations are in line with those of many visual instruction workers. How valid they are could only be determined by trial.

In his recommendations, he has spoken for thoughtful progressive educators. May some such plan as is outlined in this book soon become a reality for all our schools—no longer the dream of a few.

Meanwhile, "Visual Instruction, Its Value and Its Needs" is a most valuable addition to pedagogical literature. It is a thoughtful presentation of a current educational trend, a book which every teacher and student of education needs.—RITA HOCHHEIMER, Assistant Director in Charge, Bureau of Visual Instruction, Board of Education, New York.

Motion Pictures and Lantern Slides for Elementary Visual Education. By *H. Emmett Brown* and *Joy Bird*. New York: The Bureau of Publications, Teachers College, Columbia University, 1931, pp. 105.

One of the greatest needs of visual instruction is the dissemination of information about materials which are available, particularly motion pictures and lantern slides. This monograph presents an annotated list of teaching aids for the purpose of making possible an intelligent choice from among the vast amount of visual aids available for use in the elementary schools. The book lists the material with painstaking discrimination, selecting lantern slides, motion pictures, and strip films which will meet, in the opinion of the authors, the various needs of the elementary school teachers to the best advantage. In addition, these lists contain a critical evaluation of the material and full information concerning their price and where they may be obtained.

The monograph also suggests uses which may be made of visual aids and presents standards by which visual materials in general may be judged.

The book is divided into two parts. The first one is entitled "Visual Instruction: Its Characteristics and Materials." Part Two contains an "Annotated List of Motion Pictures, Lantern Slides, and Strip Films," classified by school subjects as follows: Civics; Elementary Science; Geography, with the subdivisions of Commerce and Industry, Foods, Other Lands and Their People, Scenic; Nature Study, with the subdivisions The Animal Kingdom, The Plant Kingdom; Physical Education and Nursery Stories. The book also has an Appendix which lists "Sources of Motion Pictures, Lantern Slides, and Strip Films," and "Sources of Projection Equipment." An Index adds greatly to the value of the book.

While such a compendium is open to the criticism that it will soon be out of date, nevertheless "constructive and intelligent demands for better educational films cannot be expected until teachers are more familiar with the visual material already on the market. To give teachers an opportunity to become familiar with this material and make it easily available for their use is the purpose of this monograph."—F. D. McC.

The Place of Visual Instruction in the Modern School, A Syllabus of a Proposed Text-Book in Visual Instruction. By *F. Dean McClusky, John J. Jenkins,*

Daniel C. Knowlton, and *Elda Merton*. Lawrence, Kansas: Bureau of Visual Instruction, The University of Kansas. 1932, pp. 106.

In response to the increasing demand for adequate material to be used in developing teacher-training courses in the field of visual instruction, the outline, "Syllabus of a Proposed Text in Visual Instruction," was prepared. A first mimeographed edition was published in June, 1930, and a second early in the fall of 1932.

In the introductory words of the authors, "The main justification for discussing visual aids to instruction apart from general methods is the fact that there has developed, rightly enough, a strong movement to centralize visual materials in schools as they became increasingly common through the rapid growth of photography. This movement toward centralization was furthered by (1) the development of elaborate educational departments in museums, such as the Commercial Museum of Philadelphia, the American Museum of Natural History in New York, and the Field Museum in Chicago; (2) the establishment of school museums, such as those in St. Louis, Reading, and Cleveland; (3) the development of visual instruction extension service in state universities, such as the Universities of Kansas and Wisconsin; (4) the growth of city school bureaus of visual instruction, as in Newark, Chicago, Los Angeles, and New York; and (5) the organization of companies to manufacture and distribute materials and equipment for visual instruction."

"A second reason for a separate discussion is found in the fact that in general or special methods textbooks, little attention has been given to the use of visual materials. Finally, a critical anaylsis and evaluation of the situation is needed before mistakes are made which will detract from the advantages of using such devices" (p. 1).

The syllabus includes, in addition to the brief introduction, an outline of general and special points of discussion under the following chapter headings:

1. The place of visual instruction in the modern school, from the viewpoint of the educational psychologist.
2. What experience has taught us about the value and place of visual instruction in the modern school.
3. What research has taught us about the value and place of visual instruction in the modern school.
4. A classification of visual materials.
5. A description of the various types of visual material.
6. The technique of teaching with visual aids.
7. The use of visual aids as applied to the various school subjects.
8. The administration of visual instruction in the modern school.
9. The production, care and distribution of visual materials.

In addition there are two sections or chapters which are merely lists of sources from which various types of visual instruction materials and equipment may be secured. These sections are slightly inaccurate, presumably through the use of information which was collected two years or more ago, but many of the suggestions will be helpful to all who are interested in securing such materials.

Although the syllabus would not be adequate as a text for teacher-training courses in visual instruction, it would serve admirably as an outline which might be enlarged upon at the will of the instructor in charge. It would be extremely helpful in considering the types of visual aids for special situations as it lists both the advantages and limitations of the more common materials and equipment. Undoubtedly the minor errors in the manuscript and the omissions of certain materials will be corrected in the printed edition. It should, then, provide excellent material in outline form for the use of instructors in charge of visual instruction courses, students in such courses, and teachers in service who are interested in modernizing the instructional procedure in their classes.—ELLSWORTH C. DENT, Secretary of the Department of Visual Instruction of the National Education Association.

Motion Pictures in the Classroom. By *Ben D. Wood* and *Frank N. Freeman*. Boston: Houghton Mifflin Company, 1929, pp. xxi + 392.

Among the several important investigations of the value of the motion picture in teaching, one finds that the Eastman experiment involved the greatest outlay of money and was the widest in scope. The history of the experiment begins with the appointment of the National Education Association Committee on Visual Education in 1922. This committee gave serious consideration to the use of the motion picture for teaching purposes. In order to secure reliable information on the method of procedure in making such pictures and other matters, the committee coöperated with the officials of the Motion Picture Producers and Distributors of America, Inc., in the solution of such problems. Through this coöperative effort the interest of the National Education Association was called to the attention of the Eastman Kodak Company. In February, 1926, Mr. George Eastman announced that the Eastman Kodak Company had decided to undertake a practical experiment in the use of films in schools and to study the following questions:

1. Can films be produced which are correlated with standard courses of study?

2. Can the teaching value of these films, when used to supplement the usual pedagogical devices of the teacher in the classroom, be measured?

3. Is the educational value of the contributions of the films sufficient to justify the expenditure required to make them a regular part of the equipment of the schools?

"Realizing the difficulty and complexity of the problems that would be involved in such an experiment, it was announced that a period of two years would be taken for its completion; that all expenses involved in conducting the experiment, including the production of films, the use of projectors, screens, and other apparatus, would be paid by the company; and that the company would neither rent nor sell films or apparatus during the period of the experiment."

The Eastman Kodak Company then formed a subsidiary corporation known as Eastman Teaching Films, Inc. Its president was an educator of outstanding reputation and experience, Dr. Thomas E. Finnegan, who was at one time chairman of the National Education Association Committee on Visual Education. Dr. Finegan in turn selected Professors Wood and Freeman of Columbia University and Chicago University respectively, to conduct the classroom experiment which is described in their book "Motion Pictures in the Classroom." The authors of the book state that the purpose of the experiment was to learn "what contributions twenty teaching films might make when used as a regular and integral part of classroom work."

The class instruction phase of the experiment began the first week in February, 1928, and continued until the middle of May the same year. Twelve cities cooperated in the enterprise, being widely distributed throughout the United States. Nearly eleven thousand children, in more than three hundred Geography and General Science classes, taught by nearly two hundred teachers in grades four to nine inclusive, participated in the study. The topics taught in Geography and in General Science in the order in which they were presented is as follows:

Geography

1. New England Fisheries—Cod.
2. Wisconsin Dairies.
3. Wheat.
4. Wheat to Bread.
5. Cattle.
6. Corn.
7. Cotton Growing.
8. Irrigation.
9. Bituminous Coal.
10. Iron Ore to Pig Iron.

General Science

1. Hot Air Heating.
2. Atmospheric Pressure.
3. Compressed Air.
4. Water Cycle.
5. Water Supply.

6. Purifying Water.
7. Limestone and Marble.
8. Sand and Clay.
9. Reforestation.
10. Planting and Care of Trees.

The students being taught in these subjects were about equally divided between the experimental and control groups, the experimental groups were taught by the films in addition to other classroom procedure, whereas the control groups were taught by the usual classroom procedure.

The effectiveness of the instruction with the aid of the films was measured in two ways. The grades which were made by the two groups from the beginning to the end of the experiment were compared by giving the same test to the pupils at the beginning and the end. The test which was used to do this was called the "Comprehensive Test." It was of the multiple choice type. A second type of examination was made at the end of the instructional period by using "Topical Tests." These tests were of the essay type, which required pupils to give answers to specific questions either in the form of a very brief written composition or by means of a map or diagram.

The results of the experiment showed that the film-taught groups excelled the control groups by a substantial and significant margin. The superiority of the groups was greater in the case of geography than in the case of science. In the case of the geography series the gains of the experimental groups exceeded the gains of the control groups by thirty-three per cent of the standard deviation of all the scores. In general science the experimental groups exceeded the control groups by fifteen per cent of the standard deviation. These are substantial and reliable differences. In the Topical Test results the experimental groups were decidedly superior on the descriptive type of question, but on the abstract type of question the two groups as measured by the final scores of the Topical Test were practically equal.

The authors conclude that the motion picture film contributes to both the direct and the indirect aspects of a child's education, but that it contributes a larger amount to the direct. In other words, the film gives the child clear-cut notions of the objects and actions of the world about him. If we ignore certain minor types of motion picture presentations, such as animated diagrams, this comprises the chief educational effect of the film. They feel, therefore, that the film should devote itself primarily to enabling the pupil to get clear-cut and correct notions of the physical aspect of the world. This, they say, is its immediate function. The material which is to be included in the film should be selected with this in view. The ultimate purpose of securing a clear-cut and concrete idea, of course, is to promote exactness and soundness in thinking.

In a short review of this sort it is impossible to fully describe this important experiment in detail. One must go to the original source for the detailed data therein presented. The book is illustrated and in addition to a description of the experiment and extensive tables of results, there are appendices listing the test questions used, together with other valuable data and information. The book constitutes a substantial contribution to the literature in the field.—F. D. McC.

Motion Pictures in History Teaching. By *Daniel C. Knowlton* and *J. Warren Tilton*. New Haven: Yale University Press, 1929, pp. xi + 184.

The series of history pictures known as the Chronicles of America Photoplays is one of the finest series of motion pictures ever produced for strictly educational purposes. The pictures were made under the supervision and direction of the Yale University Press and have been noted for their authenticity and scrupulous accuracy as to detail.

"Motion Pictures in History Teaching" is an account of the study of the value of the Chronicles of America Photoplays as an aid in Seventh Grade history instruction. The purpose of the experiment was to measure the contribution of the photoplays to the enrichment, retention, and

creation of interests in American history. The study was conducted in the Seventh Grade of the Troup Junior High School of New Haven, Connecticut. In the study there were 521 pupils, divided into 15 sections of approximately 35 pupils each. All of the photoplays were shown in the regular social studies classrooms. The experiment lasted from the first of November, 1927, to the end of the school year in June, 1928. The actual experimental teaching occupied from February to June inclusive, covering five units in American History.

A set of comprehensive tests were designed by Professor Knowlton to measure the results of the instruction. These tests were given before and after instruction in each unit, and later a third time to measure their retention of knowledge. The tests were designed to measure the ability of the pupil to deal intelligently with certain content, namely, of time, of place, of person, and of the interaction of events and of the interplay of forces. In addition, a standardized test, the Van Wagenen American History Information Test, was given to check the progress of the students against the requirements of the standard course of study.

There were two sets of groups to be measured, one known as the "Experimental Group," who were taught by films; the other classes were known as the "Control Group," who were not taught by the films. The teachers in both groups were at liberty to use other methods of instruction, the one differentiating factor being the showing of the films to the "Experimental Group."

Among the several conclusions drawn by the authors as the result of the study are the following:

"1. That the photoplays contributed materially [19 per cent] to the gaining and retention of worth-while knowledge, particularly of knowledge of interrelationships, other than time [35 per cent].

2. That they produced more pupil participation in classroom discussion; and

3. That they caused the pupils who saw them to read voluntarily more supplementary history reading material under controlled classroom conditions." (p. 93)

The results of this study of the use of the motion picture in history teaching are in accord with the findings of other research workers in the field. That the visual method of presentation is of material benefit to students has been demonstrated many times in the various carefully controlled studies which have been conducted. The next step should be the application of the visual technique on a wide scale in the schoolrooms of America. —F. D. McC.

Visual Instruction in the Public Schools. By *Anna Verona Dorris.* Boston: Ginn and Company, 1928, pp. x + 481. Profusely illustrated.

As the movement of visual instruction grew in influence eight to ten years ago, it soon became apparent that one of the greatest problems was the training of teachers in the use of visual materials and equipment. Teacher-training institutions, colleges, and universities began to offer courses on visual instruction. While many of these courses were given for short terms in the summer schools, nevertheless they filled a distinct need.

At first the instructors of these courses labored without a suitable text-book. Therefore, the appearance of "Visual Instruction in the Public Schools" in 1928 was most timely, as the book was written to be a text-book for use in teacher-training institutions. It was the first book to be written for this purpose.

The book is divided into three parts: Part I, The Background of Visual Instruction in Modern Educational Procedure; Part II, Visual Instruction Applied to the Teaching of the Various Subjects of the Curriculum; and Part III, Administrative Problems of Visual Instruction in the Public Schools. Courses of study which appear from time to time always list this book as one of the standard reference works or text-books to be used in visual instruction classes. It has filled a definite need in the field and continues to do so.—F. D. McC.